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**BAKER'S DOZEN:
ABSTRACTS OF
13 DOCTORAL DISSERTATIONS
COMPLETED UNDER
MANPOWER ADMINISTRATION
RESEARCH GRANTS**

**MANPOWER RESEARCH MONOGRAPH
NO. 27**

U. S. DEPARTMENT OF LABOR

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These abstracts, and the dissertations on which they are based, were prepared under contract with the Manpower Administration, U. S. Department of Labor, under the authority of the Manpower Development and Training Act. Researchers undertaking such projects are encouraged to express their own judgment. Their interpretations or viewpoints do not necessarily represent the official position or policy of the Labor Department. The contractors are solely responsible for the contents of this publication.

U. S. DEPARTMENT OF LABOR
Peter J. Brennan, Secretary
Manpower Administration



1973

PREFACE

The 13 dissertations which are abstracted in this monograph were selected from among nearly 75 completed during fiscal years 1970 and 1971 under doctoral dissertation research grants from the Manpower Administration. It was the purpose of the editors who abstracted the dissertations to trim them to digestible size and at the same time to ferret out and retain the truly significant elements of the contents, preserve the flavor of the original, and present enough of the methodology to illuminate the approaches and permit the specialist to appraise their validity. In doing this, numerous liberties were taken with the authors' language and organization, so they are not given bylines on the abstracts, even though they were given the opportunity to review and revise the abstracts. They are listed at the

end of this preface, together with the titles of their dissertations and the universities from which they earned their Ph.D.'s. The listing also includes the accession numbers assigned to the full reports by the National Technical Information Service, from which they may be purchased. Interested persons can also read the complete dissertation of each author in the library of the university granting his degree or of the U.S. Department of Labor.

The editors—graduate students at the University of Arizona—are Allen Abrahamson (finance), Susan Ghozeil (educational psychology), and Barry Bainton (anthropology). Each is a doctoral candidate, soon to complete his own dissertation—a task on which the work on this monograph should have a salutary effect.

This monograph contains abstracts of the following dissertations:

<i>Author and University</i>	<i>Title of Dissertation</i>	<i>Accession No.¹</i>
Ronald Gordon Ehrenberg Northwestern University	The Short-Run Employment Decision and Overtime Behavior in U.S. Industry, 1966	PB 190138 (\$6)
Robert Joseph Flanagan University of California (Berkeley)	An Analysis of International Differences in Noncyclical Unemployment	PB 194418
James David Gwartney University of Washington	Income and Occupational Differences Between Whites and Nonwhites	PB 191773
Gary Barker Hansen Cornell University	Britain's Industrial Training Act: A Case Study in the Development of Public Manpower Policy	PB 197324 (\$9)
Bennett Harrison University of Pennsylvania	Education, Training, and the Urban Ghetto	PB 196454 (\$6)
Dorothy Mary Chave Herberg University of Michigan	Career Patterns and Work Participation of Graduate Female Social Workers	PB 196652
Albert Sidney King Texas Tech University	Managerial Relations with Disadvantaged Work Groups: Supervisory Expectations of the Underprivileged Worker	PB 190986 (\$6)
Robert Irving Lerman Massachusetts Institute of Technology	An Analysis of Youth Labor Force Participation, School Activity, and Employment Rates	PB 190463 (\$6)
Ronald L. Oaxaca Princeton University	Male-Female Wage Differentials in Urban Labor Markets	PB 199974
Robert Danton Reischauer Columbia University	The Impact of the Welfare System on Black Migration and Marital Stability	PB 202030
Jay Siegel Stanford University	Intrametropolitan Migration of White and Minority Group Households	PB 195410
Michael L. Wachter Harvard University	Relative Wage Determination Among Industries: Some Theoretical and Empirical Results	PB 195377
Robert Frederick Wilson Columbia University	Labor Force Participation and Business Fluctuations—An Analysis by Cyclical Stages	PB 191699 (\$6)

¹ Specify this number when ordering copies of the report from the National Technical Information Service, Springfield, Va. 22151. Microfiche copies are 95 cents each; paper copies are \$3 each unless otherwise specified.

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INTRODUCTION

When the research program of the Manpower Administration began a decade ago, it ran into a supply and demand problem of its own: finding enough scholars sufficiently conversant with manpower problems and labor market operations to conduct meaningful research. Hence, the Manpower Administration began to sponsor doctoral dissertations based on subjects appropriate to the manpower field for a dual purpose. It wanted to stimulate interest in conducting relevant research and to help build a reservoir of skilled manpower researchers.

Through fiscal year 1972, approximately 250 dissertations have been supported by Manpower research grants. A sampling of these, in abstract form, makes up this monograph. Though it could be a justifiably proud display of program wares, it has a broader purpose, which this introduction will try to define.

Nearly 30,000 doctoral dissertations are written annually in the United States, covering the multitudinous aspects of science and the humanities. Dissertations present data and data relationships, challenges to theories and techniques, original theories, and new techniques; and they usually develop their theses in an analytical, meaningful, objective, and professionally sound manner.

The doctoral dissertation—so exploratory of the phenomena of human institutions and behavior—has become an institutional phenomenon in its own right. Its completion is an initiation rite; its approval, both a signal and a requisite of admission to academic life. For the author, the dissertation regimen very often is a traumatic experience, taking 1 to 5 years of his life—ordinarily his most deprived and penurious years.

But is the dissertation, so arduously achieved, merely an academic ordeal by fire or is it also a socially useful document? Naturally, the contention of this monograph, and of the Manpower Administration which sponsored it, is that the information in at least certain dissertations deserves more widespread attention and use, especially in nonacademic circles, than it presently commands. Most dissertations, when published, go into limbo on library shelves of the granting university, forgotten save for routine recognition in bibliographies, or citation in other dissertations. A select few are rewritten and published as books or journal articles.

Why does this mass of scholarship, delving into so many recesses of human knowledge and behavior, have such limited use and appeal? Surely, the subject matter holds intellectual or workaday interest and utility, even for persons far removed from and far outnumbering the academic community, and to the extent that this social need is unfilled there is a social debt unpaid.

There are numerous reasons why dissertations lie fallow. One is the traditional academic purpose of the dissertation, described above, with its aura of elitism. A second is the element of distortion that results when the candidate accommodates his work to the predilections of a reviewing committee. Another is the very volume of the candidates' output and the rigidities of the standardized format that custom dictates, so that the surface similarity leads the outsider to believe that, when you have seen one thesis, you've seen them all. Still a fourth flows from the presentation of circumscribed subject matter in a mass of detail that tells the reader all that the author knows about the subject rather than what the reader wants or needs to learn.

It is the *mode* of communication, however, that baffles and repels the large group of hopeful but bewildered potential readers whose concerns fall between academia and those indifferent to professional research. It also often baffles professionals in other disciplines. The stylistic mannerisms of the dissertation can be summarized as a penchant for jargon, a propensity for quantification expressed in very sophisticated models, and a preference for presenting data over adequately delineated policy or other implications. In these matters, the dissertation does not differ markedly from much other scholarly research writing.

What turns readers off more than anything else is the strange language of the dissertation—the tyranny of jargon so characteristic of most research writing, especially in the social sciences, hiding the light of knowledge under a bushel of words. The turgidity, stiltedness, and sometimes plain pretentiousness of dissertation prose originate partly in tradition and partly from a sense that the recondite is the profound, that it is better to write “heteroscedasticity,” and be scholarly chic, than to write “unequal variation,” and be understood. Jargon has both its perverse and its proper uses. In the physical sciences, especially, jargon can be a precise but limited language, a useful private code. Lucy Mair of the London School of Economics, however, suggests that jargon is not always an aid to clear communication, nor a badge of professional competence, but may conceal a lack of mastery which, if possessed, would make jargon unnecessary.

Quantification is a more subtle deterrent for the lay reader. The language of the computer is substituted for the language of everyday discourse. Mathematics produces a fearsome effect on people generally, and the intricacies of econometrics are beyond the comprehension of all but a relatively few specialists. Paul Valery wrote that “we see speech dwindling in importance in every field where accuracy is on the increase. . . . Words no longer consummate the act of the mind’s possession.” Galbraith wonders whether economists, in their devotion to mathematical statistics and abandonment of the normal use of the language, have gotten “out of touch with reality.”

No vendetta against mathematical models is intended here. They are potent reflections of technical and theoretical advance. Rather the purpose is to admonish researchers that models for models’ sake and models which are not adequately described in understandable verbal symbols can never reach people who could and

might want to apply what is usable to real situations. These are not necessarily other econometricians.

The progress of statistical theory and technology leads also to the proliferation of tables, with myriad columns substituting for contemplative wisdom. Jacques Barzun laments that as “specialties multiplied, the proofs by observation and common sense gave way to mathematical demonstration—in short, science lost communicability through words, and with it lost the eager and informed interest of the educated. . . .” Text takes mainly the form of statements and proofs of hypotheses. This too is a manifestation of the dissertation prose mystique. But analysis—real analysis for policy and action and real-world use—is sparse. Data are apotheosized, and we would all do well to heed Santayana: “. . . Data are but signals; and they are signals a priori, because intelligence is an expression of adaptation in the past and of capacity for further adaptation. In view of this, a datum is a challenge; and animal intelligence does not cry ‘There it is,’ but ‘What is that?’ . . .”

A dozen years ago, J. R. Sargent, an Oxford economist, cogently addressed himself to the very problems of scholarly reading, writing, and arithmetic that we have belabored in the preceding paragraphs. He thought it important for economists to be both useful and influential, and for their researches to be policy oriented.

. . . [T]he problem of communication is increasing at an alarming rate. . . partly from the tendency to specialization, partly from the desire for a rigorous methodology which involves abstractions repugnant to the layman. It is now becoming increasingly difficult for economists even to communicate with each other. . . [I may find] that Solows speak only to Arrows, and Arrows speak only to RAND. If the problem of communication is increasing within the profession, then how much more serious is the threat to its being heard by the politicians and the public! If the tragedy of the British economists is that they might be understood if only any one would listen to them, the tragedy of American economists will be that they are listened to but will not be understood.

Sargent comments wryly on economists’ propensity for somewhat pompous hypothesizing, in which commonplace observations long a part of conventional wisdom are elevated to the plane of formal hypothesis:

. . . Many times in America I have lost the thread of some one’s remarks when he has made some reference to the “Smith effect”; and it has turned out afterwards that he meant no more than the notion that quantity demanded rises when price falls, or something similar which hardly warranted making Smith immortal. . . .

The lay reader hopes to use the findings of dissertation research to aid him in policy determination or to satisfy intellectual curiosity in a given subject matter field. But if the foibles so tendentiously described above frustrate his needs, he smarts bitterly with discouragement, impatience, and, perhaps, disdain for the value of the dissertation process.

The Manpower Administration obviously has faith in the intrinsic and potentially utilitarian value of the doctoral dissertation: it has financially supported many of them, and through this monograph is making an extraordinary attempt (albeit only a beginning) to promote a broader and more practical application of some unusually good and sometimes intricately devised research endeavors. Through this monograph the Manpower Administration is also displaying the depth and breadth of its interests in the social sciences as they impinge on manpower problems. Moreover, the monograph shows the value of a selective combination of subjects that have some degree of thematic unity, especially if organized and adapted to the requirements of widespread use of academic research.

What the Manpower Administration is doing is more than just an interesting experiment. It is an exercise in good government.

The baker's dozen of dissertations abstracted in this publication were selected by the National Manpower Policy Task Force Associates, a group advisory to the Manpower Administration. Naturally, the Task Force Associates chose from among those they considered the best scholastically, but they also considered other factors, such as usefulness and contemporaneity of subject matter and how far beyond the noses of their disciplines the authors could see. Despite the wide variety of subject matter, there is a remarkable recurrence of subthemes common to these seemingly discrete studies. This concatenation of ideas, contentions, and proof, though unwitting on the part of the authors, is testimony to the good sense of the grant criteria.

If the 13 dissertations were classified into six broad subjects suggested by the major concerns of their contents (wages and income; sex, age, and race discrimination; poverty and ghetto influences on social and economic behavior; employment and unemployment incidence; movement and migration; and education and training), it would be incorrect to place any one of them exclusively under one heading. For example, eight of the dissertations could be listed under wages and income, but five of the eight also properly fall under education and training, as do three others; four of the same eight, and four additional ones, are substantially concerned

with discriminatory practices. In all (to continue the "propensity for quantification"), the 13 dissertation treatments could appropriately account for 41 entries under the six subject headings.

William Foote Whyte, writing on "The Behavioral Sciences and Manpower Research" in the recent volume honoring the 60th birthday of Eli Ginzberg, chastizes researchers for overspecialization, application of a pet method to all and any problems, the spurious division between basic and applied research, and failure to transform theoretical knowledge into practical usefulness. He finds signs of the ivory tower tottering, however, and "the legitimacy of practical concerns is no longer at issue." Perhaps the academic dissertation committees can cooperate by seeing that the ivory tower does not become a Tower of Babel.

It is only when society gets more mileage from the dissertation than the movement from point AB to point PhD that the real payoff from the human and monetary investment is realized. The dissertations represented in this volume possess qualities obscured by both their academic purpose and cant. Perhaps these abstracts will enable prospective users—including specialized writers—to recognize that the patterned data stockpiles mined from dissertation research, once they are smelted and the dross poured off, yield workable metal to be engineered for practical human purpose.

All of the dissertations point to specific imperfections in the operation of the labor market and are concerned with some facet of human capital formation. They proceed in various ways: experimenting with new techniques for analysis, collecting new or reconstituting old data for examination, proposing policy direction, suggesting program change or innovation. Some merely verify existing hypotheses. Others challenge them. But each adds to our body of knowledge or suggests the character of new research and the testing of new hypotheses.

Data, the fundament of all research, take a variety of forms and serve a variety of purposes in these dissertations. In Hansen, we have the case study, a marked departure from formal statistical presentment or theoretical analysis, but permitting great latitude in application and certainly offering the possibility of more engaging reading. The case approach can guide us through a maze of events to explain why the British Government finally intervened in industrial training; or it can allude to similar circumstances to suggest some congruence of approach or solution to a problem—e.g., the lessons for America from the British experience with training programs. The case study method—common in

political science, psychology, sociology, and anthropology—though it lacks the precision of properly constituted statistical evidence and analysis, can give us a general compass direction for policy and point to the kind and extent of evidence required.

Almost at the opposite extreme in data handling is the testing of new uses for existing data, an economical if not always satisfactory approach. Siegel's dissertation exemplifies this method. He required a large sample for the statistical model he wished to test. The Bay Area Transportation Study Commission had one ready made: 30,000 household interviews conducted for its planning work, an expensive operation even in a limited geographical region. Siegel utilized the interview data, although they proved to be somewhat inadequate for thoroughly testing his model. But his use of the survey for studying the intrametropolitan migration of white and minority householders suggests subsidiary application of both the survey and his model by local governments in planning optimum industry location. Finding new uses for existing data reduces research costs, but it can be a mixed blessing when the data generated for a specific purpose do not precisely fit a subsequent analysis.

Flanagan, for example, in studying the relationship between inflation and unemployment in a number of industrial countries, cites the difficulties encountered because of inadequacies of existing data relating to noncyclical unemployment. Interesting though such relations are, his study is eloquent proof that data needed for studying international Phillips curves are presently not up to the demands on them. In Flanagan's case, vital series are not comparable for different countries or do not exist at all, and for the policymaker this shortcoming renders international analogy a risky practice indeed. The suggestion is strong that a portion of the research dollar might profitably be invested in studies that evaluate and ultimately rectify such data discrepancies.

A number of the studies analyze the persistent social phenomenon of discrimination—against Negroes, Latin Americans, women, and young people—and, refreshingly, come up with some challenges to conventional wisdom and simplistic solutions. Harrison (coping with data problems) shows that importunities to stay in school may be misdirected advice: education is not an open sesame to either employment or job betterment. There are wide discrepancies between blacks and whites in economic benefits after attending either ghetto or nonghetto schools. Lerman, in exploring the complicated relationships among race, income level, place of residence, and numerous other factors in influencing a

youth's decision to go to school or take a job, finds—also in the face of data limitations—that policies promoting youth employment may conflict with those encouraging school attendance.

Gwartney and Oaxaca pursue the elusive measurement of discrimination. The former takes black-white income differentials and adjusts them for productivity differences. What remains is due to discrimination. Surprisingly, he concludes that sex discrimination is a more potent deterrent to black women than is racial discrimination. Oaxaca takes a different path: he constructs a measurement model employing a discrimination coefficient. Unlike Gwartney, he finds that discrimination rather than personal characteristics is the major cause of wage differentials between men and women.

The imaginative reader can speculate on the interrelated policy implications of some of the dissertations. Lerman explains that a drop in family income causes lower school attendance rates. Gwartney shows that less education results in lower income. Anti-inflation policy may result in loss of black employment and an increase in black school dropouts (Lerman) and a lessened chance at decent earnings (Gwartney). Wages in low-paying industries, where large numbers of blacks are concentrated, rise more slowly than in others (Wachter), thus continuing the circle of lessened school activity, more unemployment of women (Oaxaca), more response by children to the lure of the labor market, etc. As a corollary, the reader can also speculate on the "freezing" of the economically attractive job opportunities through discrimination, bias, and union security practices (Harrison) and on the consequences for family stability of welfare and the welfare migration trails trod by those relegated to the insecure second-class labor force (Reischauer).

If this experiment in broadening the use of doctoral dissertations is successful, the Manpower Administration will doubtless repeat it with a new group of dissertations. The speculative beginning may inspire other institutions and organizations to publish readable summaries of the works of different groups of scholars, to the end that more and more is more widely known of what new scholars are finding out about old problems.

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AN ANALYSIS OF YOUTH LABOR FORCE PARTICIPATION, SCHOOL ACTIVITY, AND EMPLOYMENT RATES

The unemployment problems of youth stem from their relative inexperience and lack of marketable skills, as well as from such institutional factors as wage rigidities, the minimum wage, and racial discrimination. In addition, there is a problem of individual choice: Should the youth spend his time in school or take a job?

The relationships of many variables to labor force participation, school activity, and employment rates are analyzed and related to policy issues. Specifically, the effects of individual, family, and area characteristics on the activity in the labor force and school of several youth subgroups are examined. In addition, the effects of these factors on employment probability are explored. Special data from the 1967 Current Population Survey, along with other Census and Bureau of Labor Statistics materials, provide the basis for the study.

Findings reveal that race and related factors more strongly influence Negro participation rates than do general characteristics shared with white youth. This suggests that special attention should be paid to the problems confronting Negro youth, both in terms of seeking solutions to these problems and also in evaluating the performance of programs designed to alleviate them.

More broadly, the findings indicate that policies to stimulate youth employment may conflict with policies to foster educational opportunities. Also, policies to stabilize the overall unemployment rate may have an adverse effect on those policies aimed at lowering youth unemployment.

Introduction

Some of the influences that help to determine youth labor force participation, school activity, and employment rates, and the relationships of the findings to policy issues concerning employment problems facing today's youth, are examined in this study. These three factors are interrelated. A youth's decision to participate in the labor force is a function of how much time he allocates to school, and his decision, in turn, affects the amount of time he will have available for work and leisure. School activity may also influence the youth's employment chances. Finally, his chances of finding employment depend on the effects of labor force

participation by other members of his age group. The main object of this study is to test the effect of the many characteristics related to the youth population on these three factors. Most recent studies have looked at these three factors separately.

Recent studies of school activity (e.g., Duncan, Bowen and Finegan, and Masters¹) have either examined trends in the behavior of one group over time (time

¹ Beverly Duncan, "Dropouts and the Unemployed," *Journal of Political Economy*, April 1965, pp. 121-134; William G. Bowen and T. A. Finegan, *The Economics of Labor Force Participation* (Princeton, N.J.: Princeton University Press, 1969); and Stanley H. Masters, "The Effect of Family Income on Children's Education: Some Findings on Inequality of Opportunity," *Journal of Human Resources*, Spring 1969, pp. 158-175.

series studies) or compared the behavior of several different groups or areas at one time (cross-sectional studies). The data available to these researchers did not permit simultaneous examination of the influence of individual and family characteristics and local employment conditions on labor force participation and school activity.

Most of these studies have lacked detailed analysis by subgroup (e.g., urban blacks below the poverty line). The cross-sectional studies have used the unemployment rate as the only measure of employment conditions, assuming a direct relationship between this rate and youth employment; moreover, the studies have been limited to observations based on data from the 1960 census.

The Present Study

These data shortcomings are overcome in the present analysis through a joint project of the Bureau of Labor Statistics and the Bureau of the Census which made possible the use of unpublished individual data records collected in the March 1967 Current Population Survey (CPS). The survey contains records on about 14,000 individuals in the 16-to-21 age group which are relevant for this analysis. Important features of these data are the links they provide between an individual's characteristics and those of his family and between two points in time—March 1967 and the 12-month average for the previous year. In addition, the CPS data are linked with statistics on area conditions for those in the sample living in standard metropolitan statistical areas (SMSA's). The combination of area and individual data in a single source² permits examination of area effects on individuals and a variety of youth subgroups, independent of individual or family influences. Although these data cannot, of course, permit analysis of the dramatic growth in youth unemployment rates in the postwar period, the examination of the current employment situation of youth in substantial detail does offer some insight into the trends in youth's labor force participation, school activity, and employment.

² The CPS tapes identify the particular SMSA where the individual lives, thus allowing one to expand the data base by combining the CPS data tapes with the SMSA data tapes. Besides the area unemployment rate for 1966 (as calculated from CPS data), the area statistics included the average wage calculated from manufacturing payroll data, the percentage change in average nonagricultural employment from 1966 to 1967 (also from payroll data), and relative employment opportunities for youth (the 1966 ratio of employment to population for youth as a percent of the comparable ratio for the entire population of working age).

Regression analysis was used to ascertain the statistical relationship of labor force participation, school activity, and employment to individual, family, and area characteristics. Essentially, this technique held constant all but one of the factors that were believed to affect labor force or school activity or employment in order to observe the effect of a change in that factor on the variable in question; for example, the effect of family income on school activity.

The framework for analysis was two models which expressed mathematically various hypotheses about the way in which a youth's work and school activity is determined.³ The models were designated as a "simple family utility model" and a "school-work-leisure model." For the examination of youth employment data, no formal model was constructed, but a variety of hypotheses were used in the analysis.

The Models

The simple family utility model focuses on the youth's role as a secondary earner within the family. The family is assumed to make decisions which maximize its ability to purchase goods and services (i.e., family utility). Family utility depends upon the family's decision about the amounts of time each member spends on earning money and on leisure (which, for the student, includes time spent in school). This decision depends, in turn, not only on the wages of different family members, and hence total family income, but also on prevailing employment conditions and the employment status of other family members. The distribution of income within the family is ignored in the model but the distribution of leisure is not.

The satisfaction, or utility, which any individual family member derives from his leisure time is seen as a function of how much that time would be worth if he or she were working. For example, the breadwinner's time may be worth \$4 an hour, while his teenage son's time may be worth only \$1 an hour. Thus, if the father's leisure increased by 1 hour and the family wanted to maintain the same income level, the son would have to work 4 hours more. On the other hand, if the son increased his leisure by 1 hour, the father would have to

³ Editor's Note: A model is simply a set of hypothetical statements about the relationship between elements in the real world. A statistical model attempts to quantify these relationships in terms of the measures available. A mathematical presentation of each model is given in the Appendix to this abstract.

increase his work time by only 15 minutes to maintain a fixed level of family income. Hence, in the model, the marginal rate of substitution (MRS)⁴ of one family member's leisure for another's is equal to the ratio of their wage rates.

The second statistical model, the school-work-leisure model, addresses the question of what combination of school, work, and leisure activity will provide the greatest satisfaction in relation to a desired goal. It is based on the concept of determining the point at which utility is greatest. It focuses on the youth's school activity decision and its relation to labor force participation. The youth decides how to allocate his time among school, work, and leisure activities. The decision is based on the youth's tastes, the tradeoffs between amounts of these activities, and the expected future returns from school activity. The model examines data for the two periods, calendar year 1966 and the month of March 1967.

Six critical assumptions are to be made in applying this model: (1) The individual may attend school during the first period, 1966, but not in the second, March 1967. (2) While the family may contribute to the youth's income, the contribution is independent of the individual's school activity or earnings. (3) The time spent in school is included in the utility function to make explicit allowance for the youth's preferences in worktime, leisuretime, and time in school. (4) It is assumed that there are no tuition or fee costs for attending school. (5) Further, the individual's wage rate in the second period (March 1967) is assumed to be related to amount of schooltime he puts in during the first period (calendar 1966). (6) Finally, it is assumed for the purposes of the model that capital and labor markets are perfect: without transaction costs, or other frictions, and having complete information for all buyers and sellers.

Basically, the model states that a youth will substitute school hours for working hours until he obtains some satisfactory combination of school and work activity. The satisfaction or utility he derives from school may be computed in terms of the present wage value of the hours he might have earned had he worked rather than gone to school. Because school activity, however, is a form of human capital investment and the youth anticipates his earning power will be much greater

at some time in the future as a result of going to school, he may discount part of the loss of wages he incurs from his school activity.

In testing the hypotheses underlying the models, as well as other major hypotheses, separate regressions were calculated for various subgroups of the youth population, depending on the test. For example, most of the labor force participation regressions were calculated for students and nonstudents, and most of the school activity regressions for youth in or not in the labor force. Within such groups, further distinctions were made by using age, race, sex, size of city, family income, and the like as independent variables, with the particular variables differing from regression to regression according to the relevant hypothesis. Most of these measures were in the form of dummy variables, with a value of 1 for a particular level of a characteristic (such as age 16 to 19) and 0 for other levels. This approach made it possible to ascertain whether, holding other factors constant, the effect of a specific characteristic differed significantly from that observed at the arbitrary zero level of the characteristic.

Labor Force Participation

The analysis of labor force participation focused on four major hypotheses: The familiar discouraged worker and added worker hypotheses, one concerning wage rates, and an income hypothesis.

The Discouraged Worker Hypothesis

This hypothesis states that poor employment conditions discourage many potential workers from searching for jobs, and good employment conditions attract them into the labor force. The test involved three sets of measures: Labor supply, youth labor force subgroups, and labor market conditions. Labor supply was measured by labor force participation during 1966 and March 1967 and by "hours supplied"⁵ in 1966. The youth labor force was divided between students and nonstudents, with each group further classified by such

⁴ Editor's Note: Marginal rate of substitution is a measure of stability, measuring the amount of additional leisure that one individual must receive for a specific reduction in the amount of work for his level of satisfaction to be maintained at the level prior to the introduction of the change.

⁵ Hours supplied were calculated from data on weeks worked in 1966, weeks looking for work in 1966, and hours worked per week.

criteria as race, education, and economic disadvantage.⁶ The measures of SMSA labor market conditions were employment rates, unemployment rates, and job opportunities for youth relative to those for adults.

Living in an SMSA with poor employment conditions had no effect on the amount of time that youth allocated to work in 1966. However, high SMSA unemployment rates did discourage many youth from participating at all in the 1966 labor market, indicating that such conditions may reduce the total amount of labor supplied. In almost every case the less advantaged (e.g., Negro, poverty tract resident, and nongraduate) displayed lower participation rates than advantaged group members. But race and poverty tract residence made no difference in the response of youth to different employment conditions. An exception was found in the case of high school graduates, who did show a smaller discouragement effect than nongraduates. Other things being equal, nonstudents had lower participation rates and students higher rates in SMSA's with unemployment above 5 percent than in other SMSA's. Youth participation varied less because of general SMSA employment conditions than because of variations in their chances for employment relative to adults.

The Added Worker Hypothesis

It is assumed that a secondary worker in the family will enter the labor force in response to the unemployment of the primary worker, i.e., the family head. The test of this hypothesis was the relationship of the duration of the family head's unemployment to youth labor force participation.

Nonstudent youth in low-income families were most influenced by the added worker effect, especially in the income category up to \$3,000. Race proved to be important, with Negro students (but not white students) being influenced by the added worker effect, especially in cases where the family head had been unemployed over 11 weeks. With this exception, labor force participation did not increase with the duration of the family head's unemployment.

⁶ A disadvantaged worker is defined in this study as a Negro or a resident of a census tract with a mean income below the poverty line, while an advantaged worker is white or a resident of a nonpoverty tract. In the analysis, Negro is compared with white, and poverty tract with nonpoverty tract.

The Wage Rate Hypothesis

Simply stated, the effects of wages on youth labor force participation depend upon the relative size of the benefit he derives from substituting leisure for work and the size of the income he might earn if he did work. The only wage rate measure available for use in the school-work-leisure model was the average SMSA wage rate in manufacturing, which may be a poor proxy for the relevant wage rate and thereby reduce the effectiveness of the test. The market for manufacturing labor may have little impact on the youth labor market, and SMSA wage rates for manufacturing may or may not be in equilibrium. The effect of this wage measure on labor force participation in March 1967 and on hours supplied in 1966 was tested for students and nonstudents.

For the most part wage rates had no effect on nonstudents or on hours supplied in 1966. Being in a high-wage SMSA, however, encouraged student participation, although there was little difference for students between low- and medium-wage SMSA's.

The Income Hypothesis

The basic assumption here was that, if an adult family member's wage increases, a youth member will reduce his work effort because of the rise in the total family income (defined in the study as "family income less the youth's own earnings," or FILOW). The hypothesis proceeds from the assumption that leisure activity is preferable to work. It also assumes that: (1) the leisure of each family member is independent of the leisure of other family members and (2) the youth gains satisfaction from any rise in family income regardless of its origin. The effects of FILOW were tested for the same youth labor force subgroups employed earlier (i.e., Negro/white, poverty tract/not poverty tract, graduate/nongraduate), while the measures of labor supply were those used in testing the wage rate hypothesis.

When the employment status of the family head was *not* held constant, the income of the rest of a youth's family exerted a stronger impact on students than on nonstudents, as expected; otherwise there was no meaningful difference between the student and nonstudent subgroups. There was a much larger decline in the rate of participation and also in the number of working hours

supplied by Negro youth between the low- and medium-income groups than for the corresponding white youth subgroups—also as expected. For all youth, high family income substantially reduced the amount of labor supplied in 1966 but had no appreciable effect on the March 1967 participation rate.

School Activity

The major hypotheses postulated the effects on youth school activity—that is, whether school was the youth's major activity in March 1967—of: (1) SMSA employment conditions and SMSA average wage rates; (2) FILOW and the education of the family head; (3) race and poverty tract residence; and (4) age, sex, and family status. Subordinate hypotheses were constructed for (1) all youth, (2) youth considering high school attendance and those considering college, and (3) youth in the labor force and those not in the labor force. Tests of the hypotheses used the school-work-leisure model.

Poor labor market conditions tended to increase school activity, but only when the area unemployment rate exceeded 5 percent. The school activity rate differed little between areas with low and those with medium unemployment rates. Area wage rates also had the expected effect; medium and high average wage rates reduced school activity for 3 out of 4 labor force subgroups.⁷ Finally, the impact of employment conditions on youth's school decision did not vary significantly by race, family income, or educational level.

High family income added as much as 18 percentage points to school activity rates while highly educated family heads added as much as 32 percentage points to this activity. On the other hand, family income had only a small impact on the school activity of those youth not participating in the labor force at all.

Race had no direct effect on school activity overall, apparently because Negroes' lower labor force participation raised school attendance enough to offset the negative effects of differences in family income and education, age, family status, and area economic conditions. When labor force participation was held constant, Negro school activity rates were 4 to 5 percentage points lower than those of whites. A similar result was found

for poverty tract residents: under the same conditions, school activity was reduced by 8 to 10 percentage points.

Aging reduced school activity rates between the 16- to 18 age group and the 19- to 21-year-old group by about 25 to 30 percentage points. The effect was weaker between members of the same groups who were nonparticipants in the labor force. Sex exerted a significant effect as well: the school participation rate of young women averaged about 3 to 4 percentage points below that of young men and was about 12 percent lower among the college-aged group. Finally, family status proved significant: the probability of school attendance was only 20 or 30 percent for family heads and wives compared with 70 percent for other youth.

Youth Employment Probability

The youth unemployment rate has remained relatively high, despite changes in labor market conditions that should, theoretically, favor increased youth employment. Even when this rate has declined, it has not dropped as much as the rates for similar groups with normally high unemployment rates (e.g., poorly educated, low-skilled, or Negro workers). This phenomenon has been the subject of many studies,⁸ most of which have failed to take into account such potentially important SMSA variables as average wage rate or the effects of these variables on youth subgroups. Nor have there been estimates of the combined influence of individual, family, and area differences on youth employment. This study overcomes these weaknesses by considering the effects on youth employment probabilities of a number of determinants (e.g., hours employed and wage/salary earnings). Therefore a set of hypotheses was constructed to test the effects of the following on youth employment probabilities: (1) Skill differences; (2) SMSA employment conditions; (3) SMSA wage rates; (4) family income and the occupation of the family head; and (5) individual variables (e.g., school activity status, age, race, etc.).

To test these factors, some changes were made in the data base. First, those *not* in the labor force were

⁷ The subgroups are: Youth 16 to 18 who had not completed high school; those 17 to 21 who had graduated from high school; youth 16 to 21 in the labor force; and those not in the labor force. All but the last group had significantly higher school activity rates in low-wage areas than in other areas.

⁸ For example, Edward Kalachek, "Determinants of Teen-Age Employment," *Journal of Human Resources*, vol. IV, No. 1, 1969, pp. 3-21.

excluded from the sample population, and employment probability was measured by employment status (i.e., employed or unemployed) in the March 1967 survey week. Second, to test the effects of skill differences on employment, some variables not considered in the earlier analysis were included (i.e., educational attainment, labor force experience, and skill level of previous job).

In testing the effects of skill differences, the researcher hypothesized that the employment rates of less permanent, less skilled, and disadvantaged young workers are lower than those of other young workers. It was found that experience in the labor market per se had a far more important effect on the probabilities of youth employment than either the kind of experience or the previous skill level attained. Education also was an important aid to employability.

It was also assumed that the employment probabilities of less skilled, less permanent, and disadvantaged workers are more highly sensitive to SMSA unemployment rate differences than those of other workers. SMSA's in which unemployment rates were above 5 percent had much lower youth employment rates than SMSA's with rates below 5 percent, but there was little difference in employment rates between areas with low or medium unemployment. Groups with higher than average education and expected job tenure found their job chances less affected by SMSA unemployment rate differences than did other youth. The employment rates of Negro youth were no more sensitive to SMSA unemployment rates than were those of whites.

Differences across SMSA's in the percentage change in employment exerted no significant effect on youth employment rates, while unemployment rate differences produced a significant but nonlinear effect.

Poverty tract residence did reduce job chances for youth in the labor force. Its effect on employment rates was found to be independent of the effects of age, race, family status, school activity status, educational attainment, labor force experience, and SMSA wage and employment conditions.

SMSA average wage rates, whether low or high, had no effect on overall youth employment rates. Less educated youth and Negro youth, however, had lower employment rates in high-wage SMSA's than in low-wage areas.

Two important findings relate to the effect of the family head's occupation on youth employment prospects. Those family heads in occupations with direct hiring power (e.g., foremen and managers) exerted the largest positive effects in helping their children find jobs.

This effect was smaller for high school graduates than for nongraduates.

Negro youth benefited more than white youth when the head of the family had direct hiring power. Apart from such instances, however, Negroes had a lower probability of employment than whites. Yet high school graduation and previous work experience, especially in a high-skilled job, contributed more to the probability of employment for Negroes than for whites.

Age had an apparently dramatic effect on youth unemployment rates: they declined sharply for young people in their late teens and early twenties. But age alone may not be responsible for this decline, as the age concept encompasses many other factors, such as the effect of child labor laws, skill, and experience. Despite the close relationship between age and unemployment rates, age had almost no direct effect on employment rates in the 16-to-21 range and only a small one when the range was extended to include 22- to 24-year-olds. The major reasons for the higher employment rates among those in their twenties apparently were the sharp rise in rates for Negroes as they left their teens and the higher proportion of experienced workers in the older group.

Race was found to continue to exert a powerful effect after accounting for the influence of age, sex, school activity, educational attainment, skill, labor force experience, family income, occupation of the family head, poverty tract residence, and SMSA wage and employment conditions. When some or all of these factors were held constant, Negro employment rates were at least 10 percentage points below white rates in the 16-to-21 age group.

Policy Implications

While few would question the goals of improving youth employment opportunities and of increasing youth school activity, one finding of this study is that some conflict may arise in pursuing both goals simultaneously. As employment opportunities improve, youth may reduce or not continue their school activity. However, there is no one-to-one relationship between work and school activity. For example, in high unemployment areas, reducing unemployment may lead youth to reduce school activity, while in areas of moderate unemployment it may have no effect at all.

One way to avoid this conflict in goals is to focus on expanding the number of part-time jobs available to youth, thereby reducing the temptation to leave school for a job. An alternative approach is to improve both job opportunities and opportunities to attend school and allow youth to resolve their own conflicts between these goals.

When the SMSA unemployment rate is unstable, youth do relatively better in the labor market. This suggests that there may be a conflict between pursuing a goal of stable unemployment rates and a goal of low youth unemployment. Since the stable rates hurt the employment chances of new entrants, special efforts toward improving the transition of youth into the labor force would prove helpful.

The findings of this study relate to five policy issues affecting young Negroes. First, reported Negro unemployment rates underestimate the problem by 5 to 8 percentage points, as many Negroes are discouraged from even entering the labor force. This implies that programs aimed at lowering Negro unemployment to a certain level must provide room to accommodate both the measured and the hidden unemployment. The same consideration should be made when evaluating such programs.

Second, policies aimed at increasing the levels of education, skill, and labor force experience among young Negroes may help reduce Negro youth unemployment rates.

A third implication of the study, on the other hand, is that improving general employment conditions in SMSA's with high unemployment rates would not have a significant effect on young Negroes, or white youth for that matter. However, employment rates and labor force participation rates were lower for youth residing in poverty tracts, which suggests a fourth policy implication: expansion of youth employment in these areas will reduce both measured and hidden youth unemployment.

Finally, it was found that Negro youth from families headed by women were subject to even lower rates of employment than those of the Negro population in general, a finding not paralleled in the white population. This finding points to the need for special programs to solve the particular employment problems of Negro youth from this group.

Three types of policies are suggested by the study results as they affect the goal of increasing school activity. First, because of the strong independent effect of family income on school activity, programs designed to remedy the economic problems preventing youth from attending school should be continued. Since the family head's educational level was shown to be very important, policies should be devised to reach the youth in poorly educated families. Finally, policies to improve poverty tract schools should focus on both improving the opportunity for education and increasing school attendance.

Appendix

Family Utility Model

Maximize family utility = $U(L_a, L_y, Y)$ subject to income and time constraints: $Y - W_a(T_a - L_a) - W_y(T_y - L_y) - UI = 0$ where U = total family utility; L_a, L_y = leisure of the adult, of the youth; T_a, T_y = total time of the adult, of the youth; W_a, W_y = wage rate of the adult, of the youth; Y = total family income; and UI = unearned income. The first order conditions are:

$$(1) \frac{\partial U}{\partial L_a} - \lambda W_a = 0; \quad (2) \frac{\partial U}{\partial L_y} - \lambda W_y; \quad (3) \frac{U}{Y} + \lambda = 0;$$

(4) $Y - W_a(T_a - L_a) - W_y(T_y - L_y) - UI = 0$. To maximize utility the marginal rates of substitution are:

$$(5) MRS_{L_y Y} = W_y; \quad (6) MRS_{L_a Y} = W_a; \quad (7) MRS_{L_y L_a} = \frac{W_y}{W_a}.$$

School-Work-Leisure Model

The problem, then, is to maximize utility over two periods subject to the time and income constraints.

Maximize $U(L_1, L_2, S_1, PV)$

Subject to $T_1 = L_1 + H_1 + S_1$

$$T_2 = L_2 + H_2$$

$$PV = W_1 H_1 + \frac{W_2(S_1) * H_2}{1 + r} + UI$$

where T = Total number of hours per period

L = Leisure hours

H = Hours of work

S = Hours of school

W = The wage rate

r = The interest rate

PV = Present value of total cash income

UI = Present value of unearned income, and subscripts refer to periods 1 and 2.

The objective function (V) is:

$$(1) V = U(L_1, L_2, S_1, PV) + \lambda_1(T_1 - L_1 - H_1 - S_1) + \lambda_2(T_2 - L_2 - H_2) + \lambda_3(PV - W_1 H_1 - \frac{W_2(S_1) * H_2}{1 + r} - UI)$$

The first-order conditions for a maximum are:

$$(2) \frac{\partial U}{\partial L_1} - \lambda_3 W_1 * \frac{\partial H_1}{\partial L_1} - \lambda_3 \frac{\frac{\partial W_2}{\partial S_1} * \frac{\partial S_1}{\partial L_1} * H_2}{1 + r} = 0$$

$$(3) \frac{\partial U}{\partial L_2} - \lambda_3 \frac{W_2(S_1) * \frac{\partial H_2}{\partial L_2}}{1 + r} = 0$$

$$(4) \frac{\partial U}{\partial S_1} - \lambda_3 W_1 \frac{\partial H_1}{\partial S_1} - \frac{\lambda_3 \frac{\partial W_2}{\partial S_1} * H_2}{1 + r} = 0$$

$$(5) \frac{\partial U}{\partial PV} + \lambda_3 = 0$$

and the constraint equations.

Setting the marginal rate of substitution of school hours equal to the price ratio yields the following result:

$$(6) MRS_{S_1 PV} = \frac{\frac{\partial U}{\partial S_1}}{\frac{\partial U}{\partial PV}} = -W_1 \frac{\frac{\partial H_1}{\partial S_1}}{\frac{\partial S_1}{\partial S_1}} * \frac{\frac{\partial W_1}{\partial S_1} * H_2}{1 + r}$$

LABOR FORCE PARTICIPATION AND BUSINESS FLUCTUATIONS: AN ANALYSIS BY CYCLICAL STAGES

Knowledge of the way in which the labor force responds in size and composition to changes in business conditions is important to a full understanding of its movements. Changes in business conditions will induce changes not only in the unemployment rate, but also in the number of persons employed and in the labor force participation rate.

If the percentage of the population comprising the labor force tends to increase as business conditions are improving from the trough of a recession, and tends to decrease as the economy moves into a slowdown, this phenomenon is referred to as the "discouraged worker" hypothesis. If this participation rate rises as business conditions are deteriorating, implying that secondary workers are entering the job market in an attempt to find jobs to compensate for the family head's unemployment, this idea is referred to as the "additional worker" hypothesis. This dissertation seeks to examine the labor market behavior of various age-sex groupings to determine which of these two positions holds during the course of successive business cycles from 1948 to 1967.

The findings generally support the discouraged worker position, in agreement with most of the previous studies done since the depression of the 1930's. Unlike the previous studies, however, the analysis segments the cycle from trough through peak and back to trough into discrete stages, to get more accurate estimates of the timing of labor force entry and withdrawal.

General Trends in the Labor Force

It is often observed that the size of the labor force, despite its growth over the long run, rises and falls with the general level of economic activity. That is, more persons either work or actively seek jobs when business conditions are good and employment is readily available than when business conditions are less favorable. The magnitude and timing of these fluctuations are the primary concern of this study.

The predominant longrun trends in the makeup of the labor force have been the growing participation of

women and the decline in the significance of farm-workers, both of which are closely related to migration from rural to urban areas. Since the turn of the century, women have made up an increasing proportion of the labor force, rising from fewer than 1 in 5 to more than 1 in 3. Since 1933, the farm population has dropped from around 25 percent to around 5 percent of the total population. This change is responsible in part for the decline in the labor force participation rates (LFPR's) or the percentage of the population which is active in the labor force, of both men over 65 years of age and teenage boys.

Between 1948 and 1967, the total labor force, consisting of those persons 16 and over who are

employed, unemployed but seeking employment, or in the Armed Forces, grew at an average annual rate of 1.4 percent, while the average growth rate of the noninstitutional population 16 years of age and older was 1.3 percent, which would seem to indicate an increase in participation.¹ Nevertheless, there is no marked upward or downward trend in the participation rate for this period, which fluctuated between 59.4 and 61.0 percent. Yet, despite relative stability of the overall rate, some striking changes in labor force composition occurred during this 20-year period.

Both the proportion of the labor force that is women and their participation rate rose in that period. Their proportion of the labor force rose from 27.9 percent to 35.1 percent, while their LFPR rose from 32.7 percent to 41.2 percent.

In contrast, men 25 to 54 years of age, referred to as primary workers (all others being secondary workers), made up a smaller proportion of the total labor force in 1967 than in 1948: 40.3 percent compared with 45.8 percent. This group also became a smaller portion of the total population, suggesting that changes in the composition of the population contributed to the shift in importance of primary workers, both in absolute numbers and relative to secondary workers.

This major shift toward a greater importance of secondary workers has been accompanied by shifts in the predominant sectors employing them: for example, employment is declining in agriculture, but is rising in public and private services.

Greater employment in services and a larger proportion of part-time workers can affect the response of the labor force to changes in business activity over the course of business cycles. In the case of rising part-time employment, the greater availability of jobs of this type and of persons ready to fill them, along with their temporary nature, is likely to increase cyclical sensitivity. Rising employment in services affects and is affected by entry into the job market by women; their attachment to the labor force is of great importance in determining this sector's sensitivity.

It seems apparent that the sizable and growing proportion of labor force members who are married could affect labor force response to business conditions through time, depending on whether married persons are more or less strongly attached to the labor force than unmarried persons. It seems logical to assume, for

example, that family ties would tend to make a male head of household more strongly attached to full-time employment. Regardless of the impact of marriage on the sensitivity of the labor force to the business cycle, the growing proportion of the labor force made up of married women is likely to contribute positively to its cyclical responsiveness, because they tend to stay home if the job outlook is bleak, but reenter the labor market when jobs are plentiful.

Some sharp differences between white and black participation trends appear in factors of both age and sex.² Among men, the participation rate for blacks moved downward, from slightly higher than that for whites in 1948 to slightly lower in 1967. Trends for blacks relative to those for whites point to the possibility of shrinking job opportunities for blacks over the long run, or a rising tendency for breakups in families. The lower rate could be the result of a steadily decreasing percentage of black men who are married with a wife present, suggesting that a smaller percentage of black men have family responsibilities; the high participation rate of black women suggests the same cause.

Increases in the minimum wage rate, optional extension of social security benefits to persons between 62 and 65, and changes in the number of young persons serving in the Armed Forces are among the influences that could change cyclical labor force behavior or make it difficult to discern the true response of the labor force to these factors. It is particularly difficult to analyze the Armed Forces within a cyclical framework. The longrun trend in the LFPR of young men 16 to 19 years of age is downward, declining roughly 10 percentage points from 1948 to 1967. The number of teenaged boys in the Armed Forces as a percentage of their population has ranged between 6.3 percent in 1966 and 12.2 percent in 1951 and 1957; the impact of the Korean war is clear, and the effect of the Vietnam war began to be evident as well, when the percentage of teenaged boys in the Armed Forces rose from slightly over 6 percent to almost 8 percent between 1966 and 1967.

An increase in the minimum wage, or a broadening of the coverage of the minimum wage laws, could operate to move a participation rate in either direction. An increase could raise the minimum above the value which a poorly qualified person could contribute to production and thus make it likely that he would lose his job and

¹ A definitional change in labor force statistics in 1967 raised the minimum age from 14 to 16, and the retroactively revised data used in this dissertation reflect the change.

² Statistics for nonwhites are used in this abstract to indicate the situation for black workers. Nationally, blacks constitute about 92 percent of the larger group.

have trouble finding a new one. On the other hand, a higher minimum wage could also encourage persons who were out of the labor force to look for work, even if jobs were scarce. In either case, the volume of unemployment would rise, at least in the short run.³ Over the longer run, however, adjustments in other wage rates could follow and inflation might erode the shortrun effect.

The relationship among labor force participation, school enrollment, and unemployment is complex and does not necessarily support the "discouraged worker" hypothesis.⁴ The extremely high unemployment rates for school-aged persons not attending school may not be directly related to the level of their participation rates but to their temporary situations; for example, the unemployment rate for young men waiting to enter the service may be pushed up if short-term jobs are not available for them.

Most school-aged young men are either in school or in the labor force (including the Armed Forces); many students are also active in the labor market, entering and leaving the labor force as their school activities dictate. Since more of the men today in the 14-to-24 age bracket are students, it is likely that this age group is less attached to the labor force than it has been in the past.

Another factor of particular significance to persons under 25 years of age is the role of manpower training programs. A sizable number of persons are undergoing training, but the effect on labor force participation rates is difficult to determine, as some of the enrolled are considered employed, some unemployed, and some not in the labor force.

Examining labor force behavior requires reasonably comparable data over the period of study, in this case the post-World War II period. The 1967 definitional

changes in the labor force ^{surveys} supposedly did not substantially affect the total estimates of employment and unemployment used here, since the largest source of noncomparability was taken into account by using the retroactively revised data to reflect the raising of the lower age limit from 14 to 16 years. But the new definitions also lowered the number of unemployed men by counting as employed those persons absent from their jobs (because of bad weather, strikes, etc.) but seeking another, who had previously been classified as unemployed. Probably the most relevant change for cyclical analysis is the new definition of unemployment, which requires a person to be available for work and to have engaged in some specific jobseeking activity within the past 4 weeks. Previously, persons in this group who volunteered the information that they were not seeking a job because they believed none was available in their line of work in their community were counted as unemployed. Excluding this group of "discouraged workers" from the labor force could reduce the sensitivity of the labor force to fluctuations in economic activity.⁵ On balance, the definitional shifts from the unemployed to the employed or to those not in the labor force had a small net effect, although the effect was pronounced for certain age-sex groups.⁶

As the makeup of the labor force changes and more secondary workers enter the market, the response of the labor force to changes in economic activity is likely to change as well. Many factors not directly associated with the makeup of the labor force can affect the ability to predict responses to cyclical changes in business: an increase in social security benefits, a boost in the minimum wage, the passage of a civil rights act, or a military buildup, to name only a few.

Responses to Changes in Business Conditions

According to labor supply theory, either of two diametrically opposed responses to changes in business activity can take place. If business activity and demand

³For example, a rise in the minimum wage to \$2 per hour might, in the first case, cause an employer to release workers formerly earning \$1.60 per hour whose value to him in contribution to production was less than \$2 per hour. In the second case, the chance to earn \$2 per hour might induce individuals not previously in the labor force to actively seek jobs. If their search was in vain, they would still not be employed but would be counted as seeking work and hence definitionally unemployed.

⁴"Discouraged worker" hypothesis refers to individuals who enter the labor force when prospects of finding jobs appear favorable but tend to withdraw from active search when prospects appear dim. Since favorable prospects are associated with peaks in the business cycle, under the discouraged worker hypothesis, fluctuations in the size of the labor force will follow business cycle fluctuations (that is, they will be procyclical). On the other hand, the "additional worker" hypothesis envisions workers entering the labor force when business conditions are poor, in an attempt to supplement falling incomes; for example, a wife entering the job market after her husband has been laid off. This behavior is generally thought of as being contracyclical, as the necessity of additional workers in a family unit would be most pronounced at the trough of business cycles.

⁵Editor's note: In 1967, new figures on those not in the labor force indicated that 732,000 persons wanted a job but thought they could not get one. Three-fifths of these were adult women and 15 percent were teenagers. It is not known how many would have been counted as unemployed under the old definitions.

⁶The net effect was not more than 0.2 percentage points on the overall unemployment rate.

for products and services slacken and workers leave the labor force owing to the difficulty in finding jobs, causing the size of the labor force to shrink, the discouraged worker position is indicated. On the other hand, if business conditions and employment opportunities deteriorate and workers not before in the labor force enter the job market in hopes of supplementing family income, the added worker position is indicated. Of course, both responses can and do occur simultaneously, but usually different responses are indicated for different age-sex groups.

Mere labeling of these responses, however, can result in inaccurate interpretations of the statistical findings. One cannot necessarily support the inference that "discouraged workers" are persons who withdraw from the labor force only after prolonged, fruitless search for employment and who then later return when job opportunities are abundant. It is probably more accurate to consider persons who do not enter the labor force during times of weak demand for labor as being "not encouraged," rather than "discouraged," since the latter implies that they have made an effort to find a job. Thus, the hypothesis that means positive cyclical behavior of the labor force should perhaps be known as the "encouraged worker" hypothesis. However, because of the wide acceptance of the terms as they stand, they will be used hereafter as they are described above.

Intensive investigation of the cyclical behavior of the labor force began in the late 1930's, with the advent of the discouraged worker hypothesis and serious efforts to collect sound data. The depression was, of course, a good testing period in which to determine the response of the labor force to extraordinarily high unemployment, but conflicting findings sparked a debate which continued into the 1940's, when World War II alleviated the unemployment problems. Subsequent investigations, however, strengthened the argument that the depression was accompanied by a reduced participation rate. The demands on the Nation's labor resources during World War II were accommodated to a large extent by a sharp increase in its labor supply, again providing evidence in support of the discouraged worker hypothesis. Besides the millions of unemployed persons who were absorbed, many others not previously employed or actively seeking jobs filled vacancies opened by expanding war production or workers joining the Armed Forces. Still others became members of the Armed Forces and hence were considered part of the labor force. After the war, a large proportion of these persons resumed activities outside of the labor force. There is danger in interpreting the

behavior of the labor force during World War II as typical of any period in which there is a sharp change in the level of business activity. That period was a time of total national commitment and patriotic fervor. Hence, it is difficult to separate the factors of patriotism which induced individuals to enter the labor force from those associated solely with the increased employment opportunities available to persons not previously employed.

Severe unemployment during the depression, however, tended to reduce the participation rate by a relatively small amount. There are several possible explanations for this weak response in light of the statistical findings for later years. One is what appears to be a growing sensitivity of the labor force to changes in the level of gross national product, stemming from the increasing number of secondary workers, particularly women, in the labor force. The growing importance of secondary workers could result from higher incomes, technological changes, greater urbanization, or additional requirements for jobs that enable persons to have greater mobility in their labor market activities. Another conceivable explanation is that high and protracted unemployment, like that seen in the depression, brings a significant number of secondary workers into the labor force, partially offsetting the discouraged worker effect. If this is true, it may follow that the relationship between unemployment and the size of the labor force is not linear, as often presumed.

Previous Analyses

With the impetus provided by studies of the labor force and its reactions to the depression, a number of studies were undertaken to determine the response of the labor force participation rate and the size of the labor force to business fluctuations.

Statistical analysis of the labor force generally involves one of two techniques: cross-sectional or time series analysis.

Cross-Sectional Results

In the cross-sectional approach, a number of cities with differing levels of business activity at a single point in time are examined, and the differences in LFPR are

noted. The unemployment rates existing in the various cities are usually employed as stand-ins for the level of business activity. A drawback to this approach is that it is questionable to assume that the LFPR responds to changes in unemployment over the course of time in the same way as it does to the different unemployment rates that exist in different labor markets at one point in time. Hence, cross-sectional analysis can only indirectly suggest labor force behavior over the course of business activity. All that can be said with certainty is that the cross-sectional studies show a generally positive relationship between labor force participation rates and differences in employment conditions. That is, in labor markets where business is good, the labor force expands, as would be predicted by the discouraged worker hypothesis.

Time Series Results⁷

Unlike cross-sectional techniques, time series analysis directly examines the relationship between the labor force and business activity by following these phenomena through time.

The behavior of the LFPR over time gives rise to two major sets of conclusions:

1. The evidence is solid that the participation rate rises and falls with economic activity, in agreement with the discouraged worker position. After adjusting for measurement errors and factors more closely related to institutional changes than cyclical factors, the present study found that an increase in employment of 100 persons results in an estimated increase in the size of the labor force of about 20 persons, as opposed to an estimate of 40 for every 100 in previous work.

2. Contrary to the usual findings for age-sex groups, the author's analyses suggested that the participation rates of men 55 to 64 years of age and women 45 to 54 years of age behave according to the additional worker hypothesis. Although the participation rates of women 55 and older are not particularly sensitive to cyclical fluctuations in labor market conditions, the evidence

suggested that their participation rate falls as business improves. In addition, the participation rate of men 20 to 24 years of age did not appear to respond to cyclical changes in the demand for labor. In agreement with other published findings, the participation rates of teenaged boys, men 65 and older, and women 16 to 44 years of age rose and fell along with the demand for labor. Finally, the LFPR's of men 25 to 54 years of age were not sensitive to variations in employment conditions.

Analysis of the Labor Force Over the Business Cycle

Time series techniques, while they are able to examine the relationship of the labor force to business activity directly by following the movement of the factors over time, are subject to some constraints. They give only a general impression of the direction and size of movements into and out of the labor force and cannot relay information about the timing of such movements in response to business activity. This is due to the way in which regression analysis works: in simplistic terms, it averages the observed movements into a line trend and thus obscures such important factors as timing of the movement.

To compensate for this problem, the movements of the labor force participation rate and the size of the labor force can be examined over the course of business cycles. Traditionally, business activity and output have been thought of as moving through stages of expansion and contraction and then into another recovery-expansion stage. This approach is widely accepted, and it is utilized here to analyze the post-1947 business cycles. (see table 1).

The final cycle, February 1961 through May 1967, is considerably longer than the others. This lopsided cycle reflects a unique time in the business environment—due largely to the combined impacts of inflation, the Vietnam buildup, and the management of the economy through money supply variation by the Federal Reserve Board. The turning points are February 1961, January 1967, and May 1967.

The trends in growth of the labor force participation rates of the various age-sex groups were plotted over time, producing a linear trend line against which actual

⁷Editor's Note: In this section, the author discussed several models which had utilized time series techniques to study labor force response. Utilizing a model with the same bases as those already published, he undertook his own regressions, with only minor restatements of the previously defined factors. On the whole, his conclusions differed only in magnitude, not in substance, from those already reported. For a detailed explanation of the econometric technique, the reader is referred to pp. 183-232 of the dissertation; only his conclusions will be reported here.

TABLE 1. REFERENCE CYCLE STAGES, 1948-67

[Beginning and ending months for each stage except turning points; number of months used in computations in parentheses]

Initial trough I	Expansion			Peak V	Contraction VI	Final trough VII
	II	III	IV			
			1/48-10/48 (10)	11/48 (3)	12/48-9/49 (10)	10/49 (3)
10/49..... (3)	11/49-1/51 (15)	2/51-3/52 (14)	4/52-6/53 (15)	7/53 (3)	8/53-7/54 (12)	8/54 (3)
8/54..... (3)	9/54-7/55 (11)	8/55-7/56 (12)	8/56-6/57 (11)	7/57 (3)	8/57-3/58 (8)	4/58 (3)
4/58..... (3)	5/58-12/58 (8)	1/59-8/59 (8)	9/59-4/60 (8)	5/60 (3)	6/60-1/61 (8)	2/61 (3)
2/61..... (3)	3/61-1/63 (23)	2/63-1/65 (24)	2/65-12/66 (23)	1/67 (3)	2/67-4/67 (3)	5/67 (3)

observations could be compared. The average of the deviations of the actual data from the linear trend were then taken to be representative of labor force behavior at stages of the business cycle.

It was found that, although labor force growth was influenced by fluctuations in business activity, the labor force has seldom, if ever, actually declined—aside from the random fluctuations one would expect—even under adverse business conditions. The participation rate expanded and contracted, therefore, with the economy, as the rate of labor force growth exceeded or fell short of the population growth rate.

With respect to labor force entry and exit, analysis of deviations from the trend yielded the following conclusions:

1. Primary workers did not appear to respond consistently and significantly to changes in demand as shown by the stages of the business cycle.

2. Men in the age groups 16 to 19 and 20 to 24 both showed marked responsiveness to demand conditions and tended to behave according to the discouraged worker hypothesis, i.e., entering the labor force when demand conditions improved and withdrawing when conditions deteriorated. Teenaged boys showed the strongest tendency toward this behavior of any group. These conclusions contrast sharply with the regression results obtained in time series and cross-sectional regression estimates, which showed no significant response. The divergence is possibly due to inaccurate trend adjustment.

3. Men 55 to 64 years of age behaved in accordance with the additional worker hypothesis, suggesting that men were more likely to retire when conditions were improving than when the economy is contracting. Men over 65, on the other hand, tended to leave the labor force when conditions were bad and to reenter the labor force when conditions improved and jobs were available.

4. Teenaged girls and women 25 to 34 years of age tended to increase their labor force participation as demand conditions improved and reduce their participation during the contraction stages, as did men in these age groups. Women in the 20-to-24 age groups showed little consistency, but possibly the participation movement of this group was approaching that of the younger and older groups. Women 35 to 44 years of age showed behavior similar to that of teenaged girls, although the size of the response was small.

5. Women over 44 years of age, like older men, appeared to bear out the additional worker hypothesis, although the evidence was once again less than conclusive. This doubt was due to inability to adjust accurately for trend, as well as to problems caused by inconsistent data for this age group.

On the whole, the participation rate generally responded positively to cyclical fluctuations, but tended to fall at the outset of expansions. At such times, substantial increases in employment were accompanied by very small rises in the labor force, reducing the unemployment rate. After the overall unemployment rate dropped to roughly 5.5 percent, the rate of growth in the labor force to the peak of the cycle seemed to be

closely related to the growth rate of employment. Moreover, the size of the potential increase in the participation rate associated with expansions appeared to be limited by the extent to which the rate was depressed at the outset of the expansion.

Conclusions

Considerable diversity was found among age-sex groups in their responses to cyclical fluctuations in economic activity. The participation rates of several groups were highly sensitive to changes in employment conditions, while others seemed to be devoid of significant cyclical movements. Moreover, some groups appeared to respond in much the same manner from cycle to cycle over the postwar decades, but this consistency was completely absent in the behavior of other groups, as indicated below. The mixed appearance of the results for a few groups suggests that further probing may be needed to produce more definitive conclusions.

The analyses by stages of the participation rate of primary workers indicated that the summary or average measures of cyclical labor force behavior resulted from the interference of several, apparently random, fluctuations in that rate. Thus, it appeared that primary workers did not respond significantly to changes in employment conditions.

In contrast to primary workers, men up to 24 years of age were sensitive to changes in employment prospects and tended to enter the labor force when jobs were easier to obtain. Teenaged boys consistently responded in large numbers to fluctuations in the state of demand in the labor market. Although movements of the participation rate of men in their early twenties were dominated by changes in the size of the Armed Forces, which were not necessarily coordinated with the business cycle, the rate seemed to behave procyclically when the flow of manpower into and out of military service was fairly steady. This conclusion opposes that reached by the regression analyses, which showed no strong responses to changes in the level of demand in the labor market.

Additional worker behavior was strongly shown by men 55 to 64 years of age, implying a tendency on the

part of this group to retire when economic conditions were improving rather than deteriorating. Men 65 and older seemed to retire, or perhaps were forced to retire, when business demand was contracting. While the conclusion cannot be as solidly supported as for the 55-to-64 age group, it could be that they tended to reenter the labor force as more jobs again became available.

Teenaged girls, many of whom were attending school, and women 25 to 34 years of age, many of whom were mothers of young children, tended to increase their labor force participation as employment opportunities became more abundant and to reduce participation when jobs were relatively scarce. The evidence supporting these conclusions was very strong. In contrast, the overall findings for women 20 to 24 years of age were almost inconclusive, showing only some slight tendency toward discouraged worker predominance. Nonetheless, the participation rate behavior of women 20 to 24 years of age appeared to be in transition, becoming increasingly like that of the immediately younger and older groups. The participation rate of women 35 to 44 years of age responded to fluctuations in demand in a manner similar to that of teenaged girls, although the magnitude of that response was very modest and the record was mixed.

Women in the three groups over 44 years of age seemed to behave according to the additional worker hypothesis. The evidence was by no means incontestable though, and it was based largely on the experience since the mid-1950's. Although the results for that brief period may be indicative of emerging additional worker behavior by these women, declining participation over the 1961-67 expansion, in particular, may reflect inadequacies of statistical trend adjustment.

The findings of analyses by cyclical stages for labor force groups were generally consistent with the regression results, but they brought into sharp focus the degree of noncyclical variation in the participation rates of these groups. Many of the noncyclical fluctuations can be explained by viewing labor force behavior in stages. Nevertheless, there remains much unexplained variation in these rates; the factors underlying the longrun trends in labor force participation need to be examined more thoroughly.



ANALYSIS OF INTERNATIONAL DIFFERENCES IN NONCYCLICAL UNEMPLOYMENT

The United States has experienced a higher rate of unemployment in the post-World War II period than any other industrialized nation. This study examines the reasons for this situation, employing the theory of the Phillips curve. Using the Phillips relationship—a trade-off between the rates of inflation and unemployment—the author analyses labor markets in the United States, Sweden, and Great Britain and explores the character of unemployment. The flow of new unemployment in the United States and the frictions and inefficiencies of its labor market are found to be largely responsible for the differences in unemployment rates.

Some evidence is presented that the policies essayed to lower the unemployment rates in this country may not have been directed to the underlying problem.

Introduction

For much of the period following World War II, economists have been perplexed by unemployment rates in the United States that are persistently higher than those in industrial European nations. Early approaches to the problem sought to show that the differences were actually statistical in nature, due to differences in definitions and techniques of gathering the data upon which reported unemployment was based. However, research in the 1960's showed that these differences did not account for a major part of the differentials. Later studies emphasized that demand for goods and services was relatively weak in the United States, as opposed to the nations in Europe that were rebuilding and expanding following World War II. However, the observed unemployment rates even in times of strong demand in the United States were higher than those abroad.

A later explanation recognized the conflict of policy goals implied in the Phillips curve and suggested that policy in the United States was geared to obtaining low rates of inflation rather than low rates of unemploy-

ment. Under this explanation, it was held that standard monetary and fiscal policies could bring the United States into line with European rates of unemployment with no additional costs in terms of inflation. This view was based on the assumption that the trade-off between unemployment and inflation postulated by the Phillips curve was the same for all countries. But the assumption was shown to be too naive an approach. Evidence indicated that the trade-offs of prices, wages, and unemployment rates differed from one country to the next, so that these differences, as well as the policy choice, helped to explain the observed unemployment differentials.

The concept of the Phillips curve was developed by A. W. Phillips of the London School of Economics. The curve, in its original form, graphed the relationship between the rate of change of prices and the percentage of unemployment. The curve may be thought of as a trade-off relationship, for if the hypothesis is correct, control of inflation and maintenance of low unemployment are conflicting policy objectives; only at the cost of increased inflation can unemployment be reduced.

Theoretical Determinants

While the Phillips curve is hypothesized to have a concave shape, its position and slope may differ from country to country and from time to time, depending on four types of forces which may act upon it.

The first deals with the degree of flexibility of wages when there is a change in the supply or demand conditions in the labor market. One of the underlying hypotheses put forth in this study is that the rate of change in wages is proportional to the amount of excess demand in the labor market. In other words, the more employers are critically short of labor, the more willing they are to bid up wages and the faster they will do so. The measure of excess demand used in this study is the difference between the job vacancy rate (i.e., the number of openings that employers are trying to fill divided by the number employed plus the number of vacancies) and the unemployment rate.¹ The latter, for this purpose, is defined as the number of persons without a job but seeking work divided by the labor force.

A second force acting on the Phillips curve is the influence of institutions, such as unions, on wage rates.

A third, but related, force is the influence of workers' expectations of future wage and price levels.

The fourth, the degree of maladjustment in the labor force, is a measure of the number of job vacancies and unemployed persons in the labor market at the same time. Maladjustment in the labor market will influence the sensitivity of the rate of wage change to excess demand conditions. Some of the important factors which bring about maladjustment are: (1) A high turnover rate (short time spent in any one job); (2) unemployment and vacancies of long duration; and (3) workers' reaction to anticipated price increases,² as mirrored in their wage demands.

¹ A direct index of job vacancies is impossible to construct, since consistent vacancy data are not available for all time periods and nations. Moreover, those that do exist are not compatible with unemployment data. Phillips used the unemployment rate as a proxy, which demands that vacancies (V) and unemployment (U) be functionally related. The present study derives a UV relationship and utilizes this estimated relationship in the ensuing analysis. (See pp. 160-163 of the dissertation.)

² Expressed algebraically: $\Delta W = k \frac{D - S}{S}$ where ΔW is the rate of change of money wages over time, D and S are the demand and supply of labor respectively, and k is the reaction coefficient denoting the flexibility of wages in response to a given disequilibrium in the labor market (including the four forces mentioned in the text).

Statistical Evaluation and Results

Equations defining the Phillips curve for each country were estimated from quarterly data for the period between the second quarter of 1951 and the end of 1968. The equations related labor force factors of the types discussed above to the rate of change in gross hourly earnings. The unemployment rates as reported by the various countries were adjusted to the methods employed in compiling the U.S. sample survey series to minimize errors in comparison. The rate of change of the relevant price index was used to capture the effect of anticipated price changes. The technique of least squares was used to "fit" a line through the points representing each quarterly observation, so that the sum of the distances from each point to the line was at a minimum. This line is then the best approximation of the relationship for the period.

The results showed that international differences in the positions and shapes of the curves were explained by differences in unemployment rates. Importantly, the number of job vacancies and the amount of unemployment occurring simultaneously were larger in the United States than in the European countries. Precise comparisons were impossible, since job vacancy data were scarce. Further, it was not possible to disaggregate directly the factors causing the maladjustment, and specific information on such characteristics could not be taken from the Phillips curves.

Available figures, however, indicated that Great Britain and Sweden each had a weekly flow of new unemployment proportionately about half that of the United States. The data implied that during the study period an average of 470,000 people, or .63 percent of the labor force, became unemployed each week in the United States, compared with 82,000, or .33 percent, in Great Britain and 12,000, or .31 percent, in Sweden. This finding not only indicates that the incidence of unemployment may be responsible for most of the observed international differences in the unemployment rates, but it also raises questions about the effectiveness of attempts to reduce unemployment and unemployment differentials via programs which are designed largely to reduce the duration of unemployment. Even if such programs succeed, a continuous flow of new unemployment could partially or completely negate the benefits of shortening the average length of time persons are unemployed. Thus, the specific causes of labor

market maladjustments can be very important from the standpoint of policy. Just what frictions are underpinning the market's problems will dictate what kind of policy is needed to remedy the situation.

The Estimated Phillips Curves

The following conclusions and observations appear to be justified from the statistical evaluation:

Over the period 1951 to 1968, the United States experienced a less favorable Phillips curve relationship than either Sweden or Great Britain. That is, for any given level of inflation, the United States would have a higher unemployment rate than the European countries. However, it would appear that if Great Britain and Sweden had had unemployment rates over 4 percent, they would have experienced more wage inflation than occurred in the United States.

The poor Phillips curve relationship has been attributed to the relatively high average rate of price inflation and/or the reaction of wages to price changes in the United States. During 1951-68, the average annual rate of change of prices was 4.3 percent in Sweden, 3.9 percent in Great Britain, and 2.3 percent in the United States. Thus, the argument that expectations of inflation account for the inferior U.S. Phillips curve does not appear to be supported by the results here.

Autonomous wage changes, that is, large and far-reaching changes brought about by organized labor, appeared to be higher in both Great Britain and Sweden than in the United States. This is not to say that U.S. unions play no role in the problem, for their presence may be felt in the speed of wage adjustment (the relationship between simultaneously high unemployment and vacancy rates through union work agreements) or in the reaction of wages to price changes.

The relatively high number of individuals remaining unemployed in the United States must result from higher turnover flows, or the number of persons separated from employment each month; it may also arise from a lower level of labor market efficiency in that a person separated from employment is more likely to incur lengthy unemployment.

There is some direct evidence that the turnover flows are larger in the United States. During the postwar years for which data are available, the average monthly separation rate was 4.3 percent of the labor force in the United States, 2.5 percent in Sweden, and between 2.6 and 3.5 percent in Great Britain, depending on the series

of data chosen.³ Thus, the incidence of unemployment would have been greater in the United States.

The reasons for the differences in turnover rates are not easy to isolate. Although there have been discussions of widespread labor hoarding and employer paternalism in many European countries and assertions that the United States has a more mobile society, these and a number of alternative economic explanations of higher American turnover rates cannot be tested carefully. However, one would expect rapid shifts in the level of employment demand and wide seasonal fluctuations during the year to induce high turnover rates. Such shifts in demand for labor would have a direct influence on layoffs. They would also have an indirect influence on the level of quits; although current job information would be hard to obtain during times of rapid change, it might nonetheless be rewarding for persons to change jobs when demand is rising.

Another crucial factor relating to sources of maladjustment is the incidence of unemployment caused by labor force entrants seeking jobs. In the United States, the rate of incidence of new unemployment is not significantly related to the total unemployment rate, indicating that in tight labor markets the decline in new unemployment associated with reduced layoffs may be offset by an increasing flow of labor force entrants seeking jobs.

Statistical analysis brings out two more differences in the labor markets of the United States and the sample European countries—in the relative magnitude of the weekly flow of unemployment and in the response of the flow to shifts in demand over the business cycle. Data on gross flows into and out of the labor force are scarce both in the United States and abroad. However, if one assumes that the gross flow and the net flow, which is reported in the familiar statistics on size of the labor force, are correlated, then the labor force entry rate should change as the labor force expands or contracts in response to changes in the level of output—the labor force elasticity. Evidence for the three countries under study indicates that the labor force elasticity is highest in Sweden (i.e., a given percentage change in the level of output induces the highest percentage change in the labor force size) and is lowest in the United States.

In summary, the incidence of unemployment is higher in the United States, in part because the

³In Great Britain, two series are available: the Ministry of Labor series and the Inland Revenue series. The former data are for manufacturing only, while the latter data cover all employment subject to payroll deduction for income tax.

underlying turnover flows are higher irrespective of business conditions and in part because the proportion of workers who voluntarily quit and then become unemployed appears to be higher in the United States. It is not clear from the available data whether the high turnover rate is due to a relatively high quit rate, layoff rate, or both. There is intuitive evidence indicating that at least the layoff rate is higher in the United States. Information on the quit rate is less reliable, and the particular labor market inefficiencies responsible for the relatively high proportion of workers who voluntarily quit and then are unable to find new employment are not fully known.

The Influence of Duration of Unemployment

The evidence above indicates that international variations in the flows of new unemployment and new vacancies alone imply a relatively strong relationship between vacancies and unemployment, and a poor Phillips curve for the United States. It remains to be discovered whether, in determining the Phillips curve position of the sample countries, differences in the flow of new unemployment are compounded by differences in the average duration of unemployment and the average time spent between jobs. The duration of unemployment is important, for each of the countries exhibits market inefficiencies, such as regional problems—great differences in unemployment rates in different regions—inflexible wage structures, and skill bottlenecks when unemployment is high. At times the disproportionately high unemployment rates in the United States have led casual observers to infer that these problems are relatively severe. If this view were correct, one would expect to find a comparatively large amount of long-duration unemployment in the United States during all phases of the business cycle, implying that bottlenecks are reached fairly early in an expansion and that the gap between actual and desired employment is relatively large at any time.

This view can be tested by observing the rate of long-duration unemployment (i.e., the number of people unemployed 13 weeks or more as a proportion of the labor force, except in the United States where published data are for 15 weeks and over), and by using regression equations to estimate the sensitivity of the rate to changes in the level of business activity, that is, the way in which the long-term rate responds to rises and falls in

business activity, in comparison with the overall unemployment rate.

During the postwar period, long-duration unemployment as a proportion of total unemployment has varied from 12 to 32 percent in the United States, 25 to 40 percent in Great Britain, and 11 to 22 percent in Sweden. The cyclical sensitivity of the long-duration unemployment rate has been greatest in the United States. Further, the evidence favors the conclusion that the relatively high U.S. rates of long-duration unemployment were indicative of loose labor markets rather than of relatively severe structural problems. While there was no discernible time trend in the United States, evidence of a trend toward increased rates of long-term unemployment appeared in the British and Swedish regressions.

In summary, each of the three sample countries had structural problems of the types referred to above. However, the analysis indicated that unemployment induced by market inefficiency (as measured by the rate of long-duration unemployment) was not more severe in the United States than in the two European countries, so that the American Phillips curve's position was not primarily due to structural problems.

These general conclusions are supported by the data for sectors of the U.S. labor force which are often viewed as important sources of structural unemployment. For example, the share of elderly, minority, and blue-collar workers among those subject to long-duration unemployment declined between 1961 and 1969 as the aggregate unemployment rate fell from 6.7 to 3.5 percent, whereas the share of white-collar and service workers increased. Although the proportion of teenagers among the long-duration unemployed did increase significantly over this period, most teenage unemployment was of shorter duration—well over half of unemployed teenagers were unemployed less than 5 weeks. Since most short-term unemployment is experienced by labor force entrants and reentrants, they may have an important impact on the cyclical stability of the overall unemployment rate, although it is not evident that entrant unemployment reflects market frictions.

Implications

The results confirm that the U.S. Phillips curve presents a less favorable trade-off for monetary and

fiscal policies than wage inflation-unemployment relations observed abroad. Neither the autonomous influence of institutions on wages nor the influence of expected price changes is an important explanation of the *relative* position of the U.S. curve during the postwar period. Instead, the trade-off reflects the fact that the United States exhibits the most incomplete adjustment of supply and demand in the labor market. Moreover, labor market maladjustment apparently increased, inducing an even poorer trade-off, during 1967-70. However, the poor adjustment is not due to severe immobilities in the United States, but reflects comparatively high rates of separations and labor force entry along with the associated unemployment. The reasons for relatively high gross turnover flows in the United States are as yet not well understood, and the traditional presumption that turnover is a byproduct of inefficiency in job markets may be further studied by more thorough analysis of racial differences in gross flows.

These findings have some implications for labor market policies, which have generally been designed to narrow the gap between the vacancy and unemployment rates by reducing the average duration of unemployment or vacancies. To the extent that these objectives are successful they will shift a properly measured Phillips curve. However, these programs do not generally treat the main source of observed international differences in Phillips curves—the factors responsible for the high incidence of unemployment and vacancies in the United States at every rate of excess demand—except to the extent that they reduce the percentage of quits, layoffs, and labor force entrants incurring unemployment. The basic problem is the relatively high rate of separations and labor force entries and the unemployment incurred with these moves—a frictional problem. Inasmuch as the labor market in the United States is really many markets with varying degrees of competitiveness, correction of the frictional problems can be difficult at best.

EDUCATION, TRAINING, AND THE URBAN GHETTO

Conventional wisdom tells us that more education leads to better jobs and less unemployment. . . But does it? This paper reports on a project which examined the effects of education on earnings, unemployment, and occupational status. Its findings contradict the widely held view that education is a sure route to success. Statistical analysis showed that ghetto blacks¹ lag behind even ghetto whites in economic welfare; that the economic welfare of urban blacks is not much better outside the ghetto or in the suburbs than it is in the inner city; and that the largest returns to education for blacks are in improved occupational status, rather than earnings or reduced probability of unemployment.

The fact that there are large white-black differences in earnings, unemployment, and occupational status—even for samples of similarly educated individuals living in the same urban neighborhoods—suggests the need for a reorientation of approaches to poverty among blacks. Specifically, the author calls for a shift in emphasis from the “defects” of poor blacks to an investigation of defects in the market system and offers a number of proposals for changes in Federal manpower policy.

Introduction

Minority economic development, especially in the Nation's cities, has been a focus of great concern in recent years. Many different programs come under this banner: antidiscrimination efforts in jobs and housing, subsidization of private corporations to increase their employment of the hard-core unemployed, location of corporate branch plants in the ghetto, development of small minority-owned commercial enterprises (so-called black capitalism), limited renewal of ghetto buildings, expansion of human services in the slums, and—ultimately—comprehensive community development and control of ghetto political institutions by citizen corporations. Income maintenance, too, is being treated as an instrument for economic development.

It is commonly assumed that people with more education and better skills are rewarded with more

prestigious and better paying jobs. Yet, from the standpoint of earnings alone, the single most important problem of urban minorities is underemployment. Minority workers have greater difficulty than whites in finding a job (any job), in finding full-time work, and in obtaining nonpoverty wages when they do work. As an indication of both the quantity and the quality of work, the extent of underemployment is one index of the success of current minority aid policies.

This report is basically an analysis of the financial return on investments in the human capital of black urban workers, taking into account whether they live in a core-city ghetto or outside such a distressed area. Investment is measured by years of school completed and participation in any of five types of formal training programs (described below). Three different residential locations are considered: central-city ghetto, the rest of the central city, and the suburban ring.

Data from two samples were combined for this study. The first sample consisted of 11,454 persons 14 years old or over, living in the 12 largest standard metropol-

¹ Statistics for nonwhites are used in this abstract to indicate the situation for black workers. Nationally, blacks constitute about 92 percent of the larger group.

itan statistical areas (SMSA's)² in March 1966, drawn from a survey conducted by the Bureau of the Census for the Office of Economic Opportunity. This data file is referred to as the Survey of Economic Opportunity (SEO). It was this sample that provided information on persons in central-city census poverty areas (used as a proxy for ghettos), the rest of the central city, and the suburban ring.

The second sample consisted of 37,330 persons 14 or over who were living in one of 10 well-defined urban ghettos³ in eight large cities in November 1966. These data, collected by the Census for the U.S. Department of Labor, are from the 1966 Urban Employment Survey (UES).

Combining the two data files, the researcher obtained information on 16 different metropolitan areas. Together, the SEO and the UES provided the most recent data on individual persons and households available for detailed analysis at the time the study was performed.

Measuring the Job Value of Education and Training

To determine what effects education and training have on employment, the author developed three regression models. Each model permitted study of training and education in relation to one of three measures of the nature of employment (wages, unemployment, and occupation). The job a person holds can be affected by a number of influences other than education—the city in which he lives, for example, or his age. Because of this, the models also tested the importance to employment of such factors as race, sex, age, and city of residence.

From SEO data, the nature of an individual's employment could be defined in three ways: earnings during the survey week in March 1966; weeks of unemployment in 1965 as a percentage of weeks in the labor force in 1965; and occupational status (assignment to one of 308 occupational categories) as of March 1966. When UES data were used, only two measures were possible: hourly

earnings during the survey week in November 1966, and employment or unemployment during the survey week.

The two measures used to assess the investment made in human capital were years of school completed and (in the SEO survey alone) participation in one or more of five types of training programs. These programs were classified as institutional, apprentice, private on-the-job, army vocational, and other government programs.

In addition, a number of other factors were explored for their potential relevance to employment. Aside from the factors mentioned earlier—age, sex, race, and city of residence—this study involved measures of intrametro-politan location (ghetto, rest of central city, or suburban ring) and of current industrial attachment.

The SEO data on hours of work indicated only whether an individual was employed at least 35 hours per week (full-time) for at least half of the weeks worked in 1965. With this limited control, much of the interpersonal variation in weekly earnings that was found could have been due to differences in hours worked per week. This problem did not arise with UES data, which provided sufficient information from which to compute hourly earnings.

Information on job tenure (seniority), an important determinant of employment status, was not available from either SEO or UES data. Another factor which could not be determined was quality of education.

Returns to Human Capital In and Outside the Ghetto

Training and Education: Central-City Poverty Areas

The SEO data showed that training appeared to have very little impact on the three measures of employment status. However, the SEO sample did not include enough persons who had completed training programs to permit the researcher to draw conclusions with confidence. Accordingly, the following discussion deals primarily with education as it relates to employment.

Analysis of the SEO data revealed that poverty-area whites are more alike from one city to the next than are blacks with respect to both the level of employment and the responsiveness of employment to variations in education. This finding was particularly surprising since

² The 12 largest SMSA's are (in alphabetical order) Baltimore, Chicago, Cleveland, Detroit, Houston, Los Angeles, New York, Philadelphia, Pittsburgh, St. Louis, San Francisco, and Washington, D.C.

³ These ghettos are Roxbury (in Boston); Central Harlem (New York City); East Harlem (New York City); Bedford-Stuyvesant (New York City); North Philadelphia (Philadelphia); North Side (St. Louis); slums of San Antonio; Mission-Fillmore (San Francisco); Salt River Bed (Phoenix); and slums of New Orleans.

the census category "white" included many Puerto Ricans and all Mexican Americans. The data permitted no more than speculation about the possible reasons for the greater intercity variation in the blacks' experience. It is clear, however, that this makes the design of an effective national urban policy for blacks much more difficult.

The following sections, based on SEO data, summarize the education results for central-city census poverty areas:

Earnings. Whites, on the average, earn well over twice as much as blacks per extra year of schooling. The job situation of blacks differs very much more from city to city, across sexes, and by age than does the situation of whites. For black Houston women working in personal services, for example, increased education is actually associated with reductions in expected weekly earnings. And the older the women, the greater the deficit. In the model, which isolates effects of passage of important institutional milestones (see figure 1), the weekly wage of white high school graduates, male and female, is over \$20 higher than that of whites who never entered high school. For blacks, the difference is only \$7. High school, therefore, has three times as high a payoff gain for ghetto whites as for ghetto blacks. With an assumed average working life of 40 years, completion of 4 full years of high school adds nearly \$19,000 to the lifetime income of whites, compared with about \$6,000 to that of blacks.⁴ Clearly, education is not a particularly sound financial investment for blacks living in the urban ghetto: there are any number of (largely illegal) activities out on the street which are capable of returning at least \$6,000 in a single year.

Unemployment. For whites, unemployment falls with years of school completed (see figure 2). Over the interval 8 to 12 years, joblessness falls substantially. (The average payoff per year of school over the entire range of 0 to 18 years is an 0.6 percent reduction.) Across all 12 cities, 15 industries, sex, and age, this payoff varies by no more than 0.1 percent. For blacks, on the other hand, the average effect of education on unemployment, as well as the effect in the 8- to 12-year interval, is virtually zero. A white college graduate from the slums can expect to be involuntarily out of work nearly 2 months less per year than a white high school

dropout who also lives in one of the urban ghettos in the sample. But the black college graduate faces nearly the same unemployment prospect as the high school dropout. There is some intercity and interindustry variation around the black average, which attains a maximum payoff of 1.1 percent less joblessness per year of school for 20-year-old St. Louis women employed in personal services.

Occupational Status. Education facilitates the entry of both white and black ghetto workers into new occupations and (at least for whites) also facilitates interoccupational mobility. Moreover, by national standards, these job changes represent a move up into higher status occupations. On the average over the entire range 0 to 18 years of school, each additional year is associated with an upward movement of 2.7 points along the Duncan-NORC ordinal prestige scale⁵ for whites and 2.0 points for blacks. The increase in payoffs from 8 to 12 years of school is 15.8 points for whites and 10.2 points for blacks.

These findings show that the effects of racial discrimination pervade even the poorest neighborhoods in the urban economy. Even though they share many similar problems, such as spatial isolation from new industrial growth centers and poor access to job information, ghetto residents diverge significantly by race in labor force status. Education helps members of both races to move into what are considered more prestigious occupations. But, once there, the blacks are systematically underemployed, receiving earnings which are hardly above the levels enjoyed in their previous positions and facing almost exactly the same expectations of unemployment as before. For ghetto whites, however, the occupational mobility induced (at least to some extent) by education is translated into substantially higher earnings and significantly lower joblessness.

Training and Education: Core-City Ghettos

Unlike the central-city census poverty areas, which served as a proxy for ghettos in the SEO study, each of

⁴ Figures represent the present value of the lifetime return to completion of high school, assuming a 40-year working life, a rectangular lifetime earnings distribution, and a 6-percent rate of time preference.

⁵ Otis Dudley Duncan's 1959 expansion of the scale developed in 1947 by the National Opinion Research Center (NORC). The NORC scale was based on ratings by "a sizable sample of the U.S. population"; the rated occupations encompassed (in 1950) less than half of the U.S. labor force. Duncan used these scores to derive a complete status rank ordering for all 425 census occupations. Each of the new scores is an ordinal rank in the interval 0 to 96.

FIGURE 1

Gains in weekly earnings associated with increased education--
central-city poverty areas in 12 SMSA's, March 1966

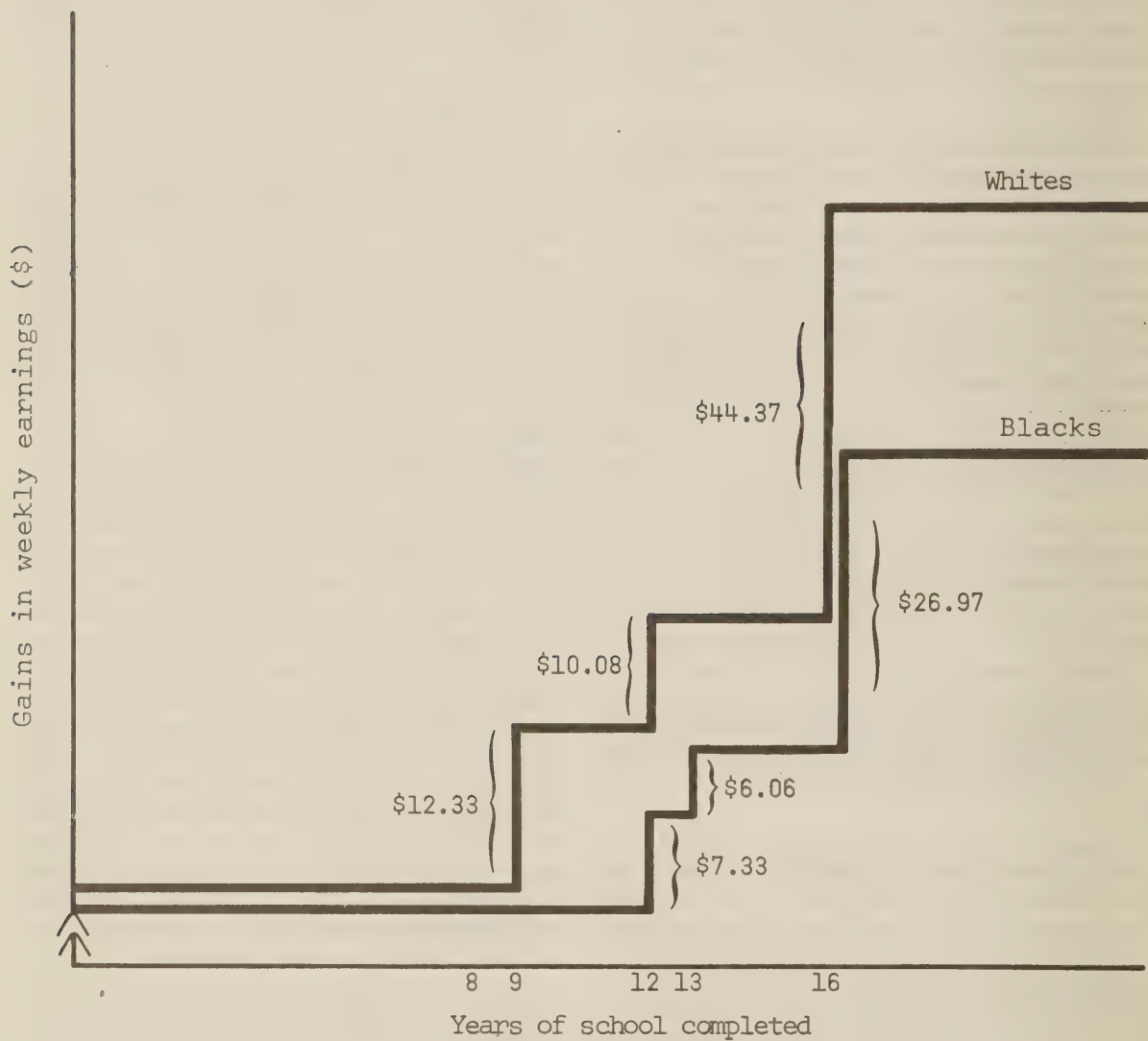
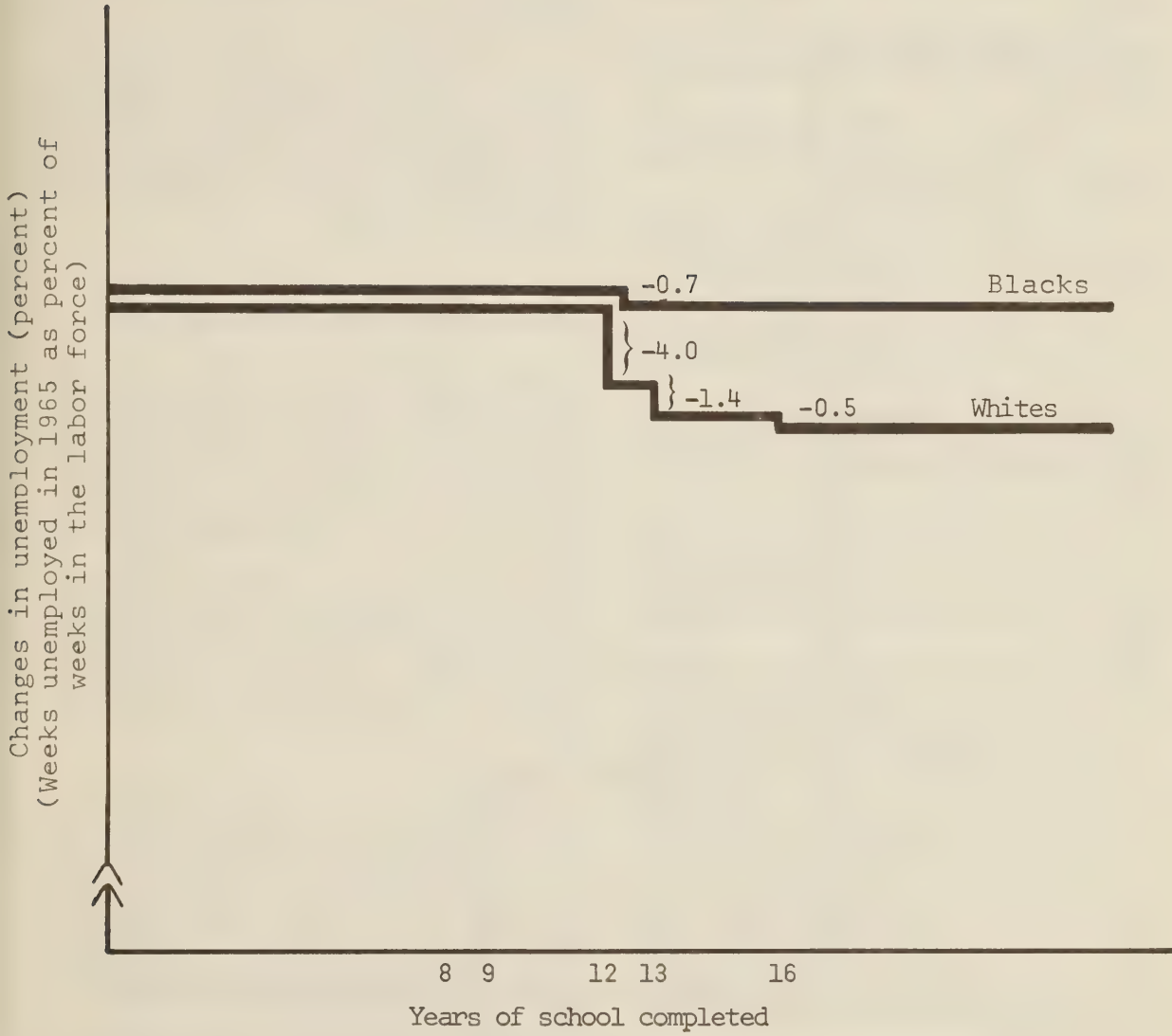


FIGURE 2

Changes in unemployment rates associated with education--
central-city poverty areas in 12 SMSA's, March 1966



the 10 ghetto communities in the Urban Employment Survey was a well-defined urban neighborhood with all surveyed tracts contiguous. The 37,330 usable records generated in this study represent a 5-percent sample of the approximately 836,000 persons 14 years of age or older believed to be living in the 10 urban ghettos that year. Data from the UES had several limitations, including:⁶

1. The fact that "response errors...abound in the reporting of income and education in household surveys and censuses."⁷

2. Uncertainty as to whether the questions and concepts used had the same meaning to ghetto residents as they have to the general population.

3. Extremely high nonresponse rates on many of the 65 variables studied (although data for the variables used in this study were considered relatively satisfactory).

4. The fact that data on some variables (e.g., age and occupation) were available only in aggregated form; for age, in particular, the class intervals (e.g., 25 to 44) were wider than would have been preferred.

5. Ghetto workers were not questioned on their participation in training programs, so that education (years of schooling) was the only policy variable for which data were available.

With these limitations clearly in mind, some tentative conclusions may be drawn. Briefly, education has only a limited (but statistically significant) impact on hourly earnings and an even weaker effect on unemployment in any given week.

Because of the greater homogeneity of the population within each UES ghetto, interracial comparisons of the kind drawn from the SEO data were not possible.

A number of different earnings models yielded estimated returns of from 3 to 9 cents per hour for each additional year of schooling and, over the school years 9 to 12 inclusive, a total of anywhere from 2 to 24 cents per hour. Workers with at least some college received, on the average, less than 20 cents per hour more than high school graduates. The maximum expected hourly wage (given maximum education) ranged from a low of \$1.56 per hour in San Antonio's Mexican American slums to a high of \$2.04 per hour in the Bedford-Stuyvesant ghetto of New York City.

In none of the ghettos was the effect of education on unemployment more than a 2-percent reduction per year of schooling. In several cases, increased education was actually associated with increased unemployment. A possible explanation is that education increases workers' expectations and standards which, when frustrated by discrimination, lead to discouragement and labor force nonparticipation.

All of these findings on the relative inefficiency of education in improving earnings and reducing unemployment are consistent with findings for the SEO poverty areas. The next section discusses samples of white and black individuals who lived outside the slum areas of the 12 largest SMSA's, to provide a comparison with the ghetto residents' experience.

Training and Education: Outside the Ghetto

Data on education outside the ghetto were drawn from the SEO study of persons aged 14 years and over in the labor force for at least 14 weeks in 1965 and no longer in school in March 1966. These persons were grouped as living either in (1) nonpoverty neighborhoods of the 12 central cities or (2) the suburban rings of these cities.

Training variables continue to be largely insignificant, which may or may not be a meaningful finding, given the small number of trainees and former trainees in the SEO sample. The following discussion deals with the relationship of education to employment status measures.

Earnings. Figures 3 and 4 show the gains in earnings with increased education for whites and blacks, in the rest of the central city and in the suburban ring. (Only those steps which are significantly different from the previous steps are shown.) Whites clearly benefit from education, even when credentials have not been received; the differential between steps is greater in the suburbs than in the nonpoverty urban areas.

For blacks, the results are strikingly different. There is apparently no earnings payoff at all for nonghetto blacks who did not at least begin a college program. In the nonpoverty central city, nothing short of a college degree brings a statistically significant return to blacks. For suburbanized blacks, college attendance short of graduation does make a difference in earnings (though

⁶ Editor's Note: Limitations 1 and 2 apply to SEO data as well.

⁷ Herman P. Miller, "Annual and Lifetime Income in Relation to Education," *American Economic Review*, December 1960, p. 963.

FIGURE 3

Gains in earnings associated with education, March 1966
(Rest of central city)

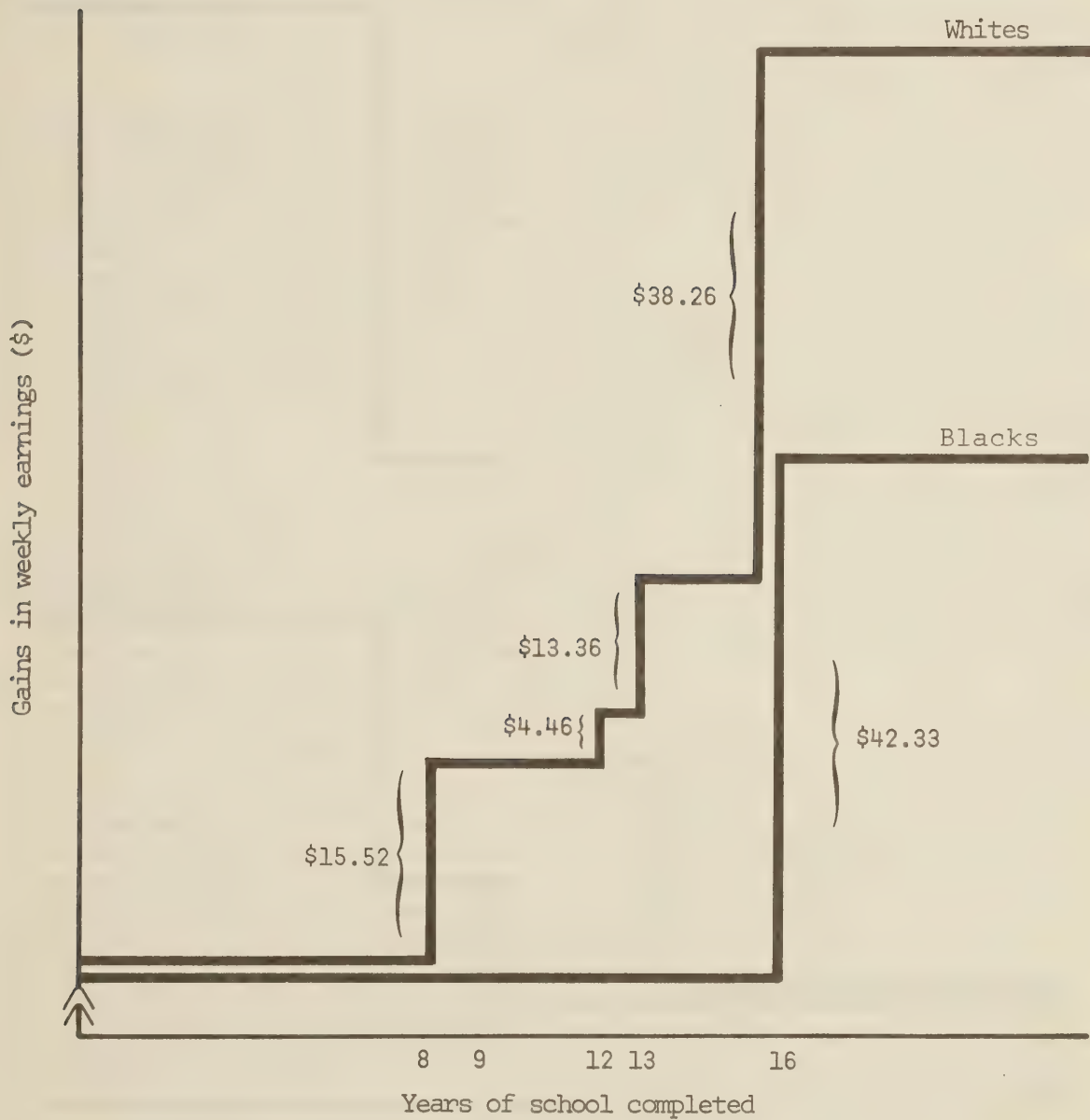
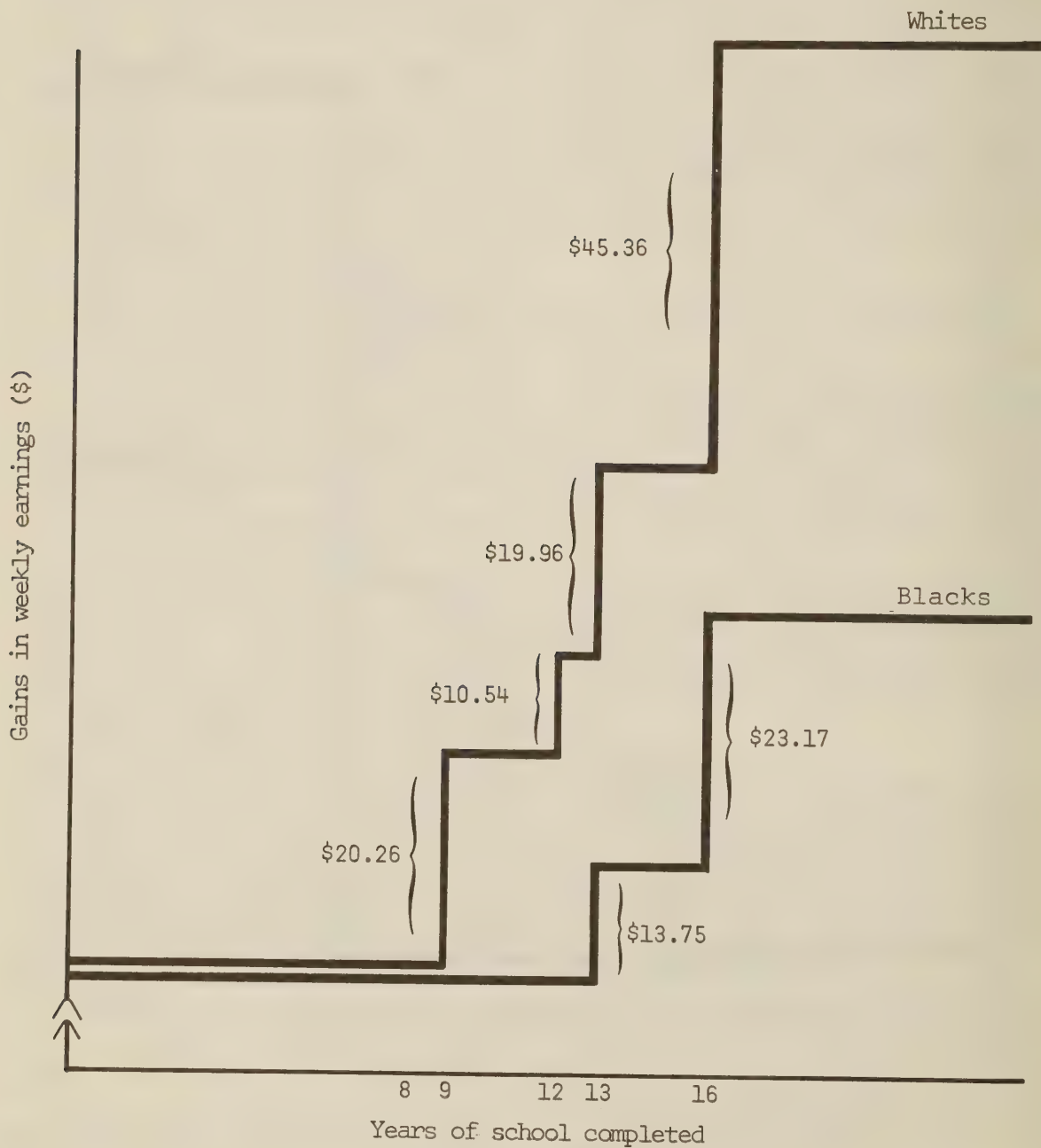


FIGURE 4

Gains in earnings associated with education, March 1966
(Suburban ring)



college graduation is more financially rewarding), but a high school diploma makes no contribution to earnings. However, cumulative black gains in earnings are slightly higher in the nonpoverty central city than in the ghetto, but lower again in the suburbs. In this case, the return on investment in suburban residents' education is even lower than the ghetto return—a conclusion far different from the conventional wisdom.

Unemployment. Unemployment results for whites parallel those for earnings. But, once again, the conventional wisdom does not apply to urban blacks. Even in the suburbs, no amount of education up to and including completion of college has any significant effect on unemployment for blacks. Indeed, among black workers living in central cities outside ghettos, high school dropouts are likely to be unemployed for a longer period of time than those who do not go beyond eighth grade. The contrast between whites and blacks in urban and suburban areas is shown graphically in figures 5 and 6.

Occupational Status. Results for occupational status as a measure of returns to education for residents of nonpoverty urban neighborhoods and the suburban ring are similar to those found in the ghetto. For both racial groups, education is associated with increased mobility into what are considered higher status occupations. However, only for whites is this higher status accompanied by higher earnings and lower unemployment.

These findings yield no evidence to support the popular contention that education would facilitate the suburbanization of unskilled or semiskilled black workers presently living in the ghetto. The returns to blacks from schooling are no higher outside than inside the core city. There is, therefore, reason to doubt that the economic opportunities of minorities would be enhanced by suburbanization. In no part of the American city does the labor market work for blacks. Given the widespread resistance of suburban whites to residential integration, it can be assumed that the costs of a policy of enforced integration would be quite high, and benefits—at least in terms of employment opportunity—would be very small. However, it would appear that the findings of the present study are by no means conclusive. Longitudinal studies are needed to track families actually undergoing suburbanization.

Implications and Conclusions

The findings may be examined in the framework of the dual market theory, which sees the economy as stratified into what Bluestone⁸ has called a "core" and a "periphery" (see figure 7). The central institution of the core is the primary labor market. Primary labor is highly productive, partly because of the skills of the workers and partly because of the use of modern equipment. Primary employers invest in the human capital of their employees so that the equipment will be used efficiently; typically, they pay nonpoverty wages.

Peripheral labor is locked out of existing primary jobs by discrimination, class bias, and the institutionalized prerogatives of primary labor. Segregated into the peripheral economy with its secondary jobs and irregular means of supporting a family, these urban poor (and the working poor elsewhere) need new jobs. These jobs must offer adequate pay, promotional opportunities, and attractive benefits. They must be stable jobs, and this stability may be what is needed to motivate the development among the disadvantaged of new attitudes toward the world of work. Finally, the new jobs must be accessible to the poor of all races in terms of both location and skill requirements. In other words, we need an explicit economic development policy in the United States.

Public service employment may be able to provide a major share of the new jobs that are needed. Employment in State and local governments is already the fastest growing sector of the economy. Federal subsidization in order to assure the continued expansion of this sector (as in the Emergency Employment Act of 1971, which provided \$2.25 billion to support a program of public sector jobs over a 2-year period), and Federal efforts to broker a share of these public service jobs for the poor (as in the Office of Economic Opportunity's Project PACEMAKER) constitute an essential part of what should be a concerted national effort to reduce segmentation in American labor markets.

Generally, labor mobility and job development programs will create competition for the services of the

⁸ Barry Bluestone, "The Tripartite Economy: Labor Markets and the Working Poor," *Poverty and Human Resources*, July/August, 1970.

FIGURE 5

Changes in unemployment associated with education
(Rest of central city)

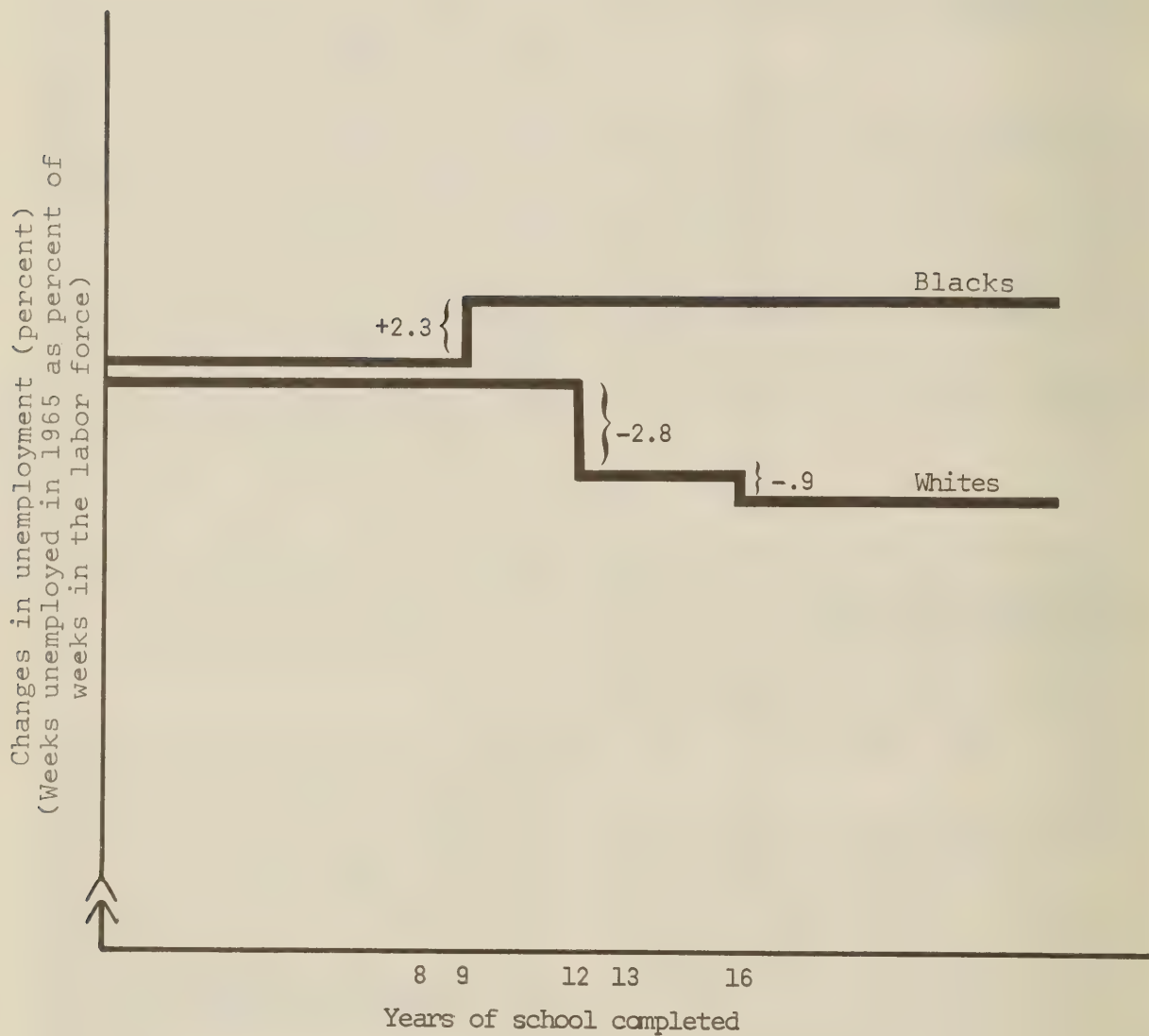


FIGURE 6

Changes in unemployment associated with education
(Suburban ring)

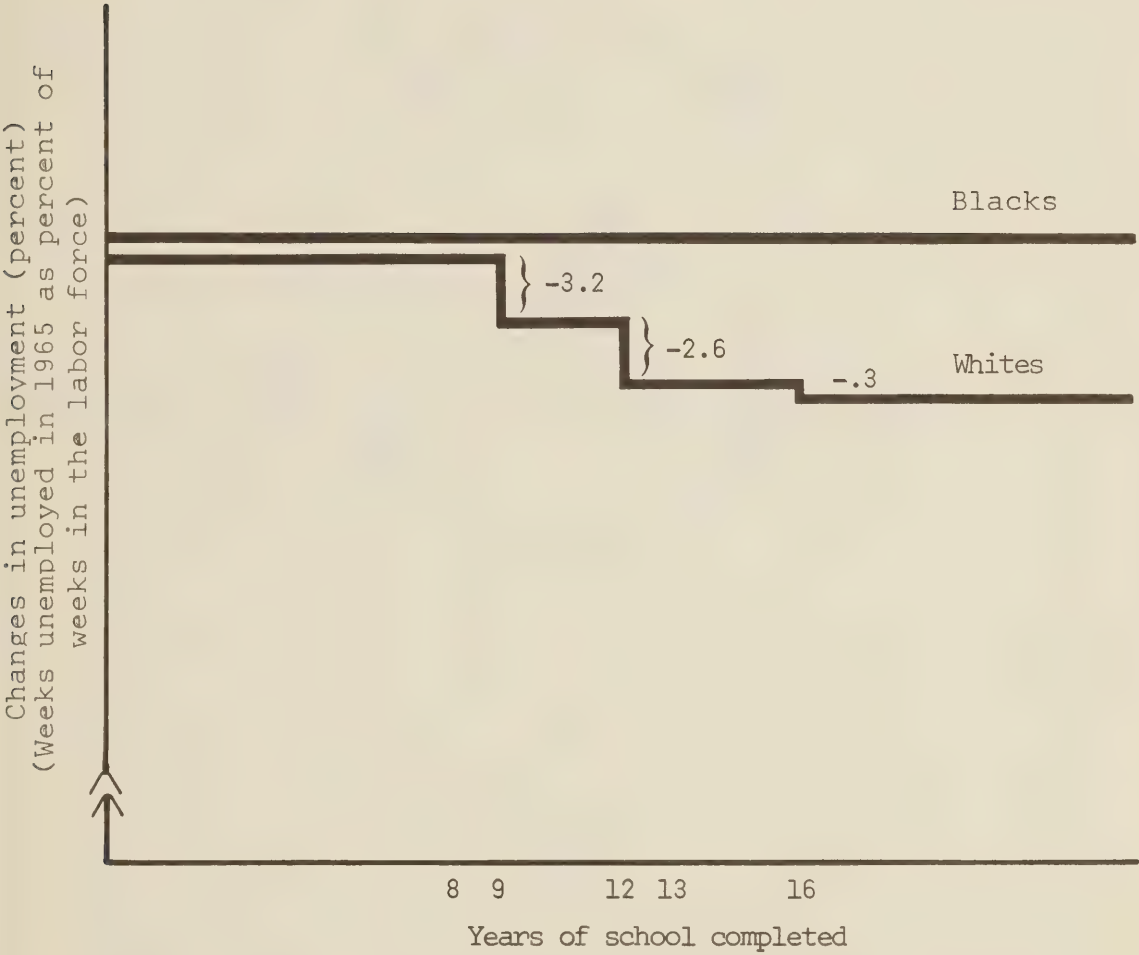
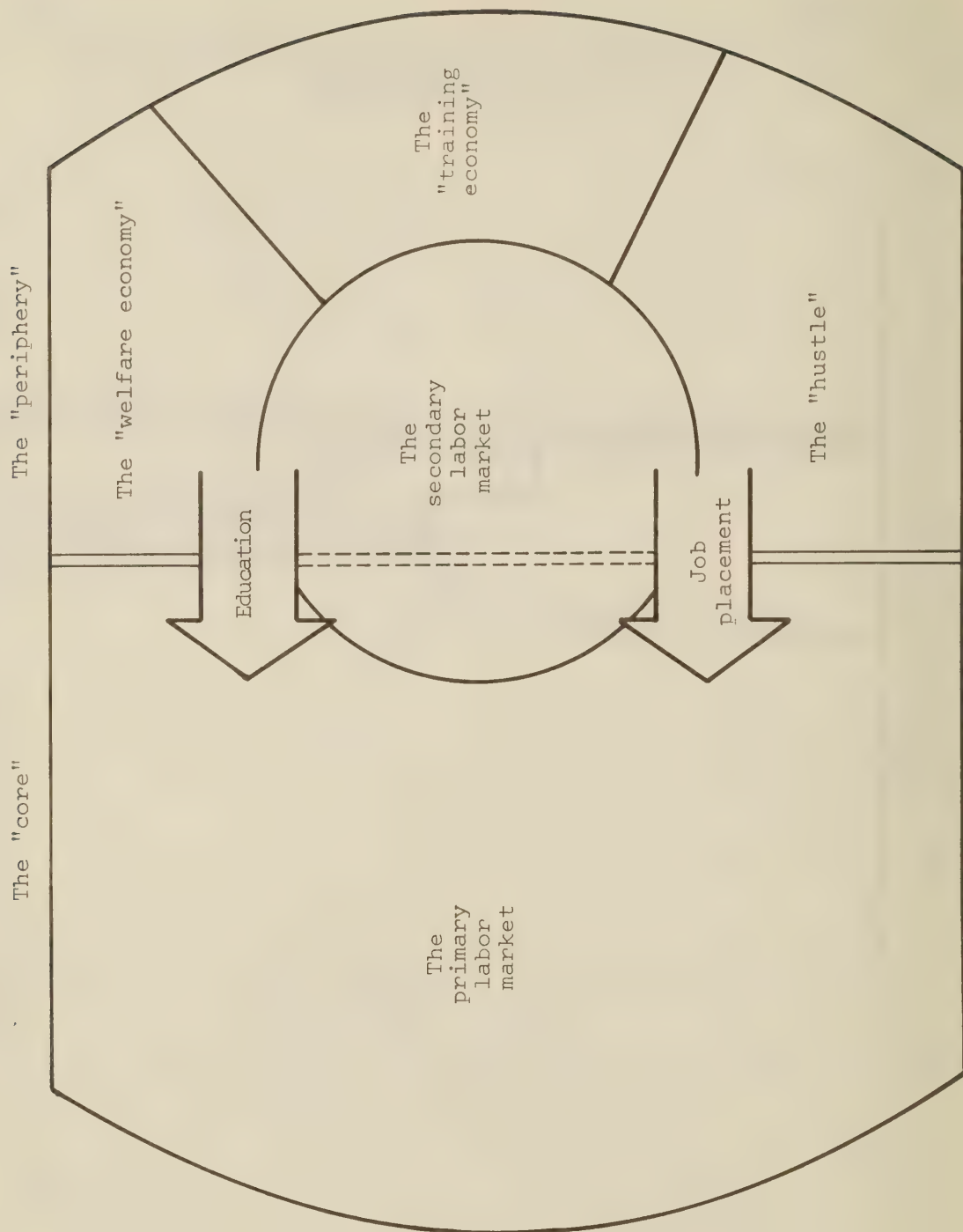


FIGURE 7

The dual economy



secondary labor force. Those workers who actually move from secondary private to primary public employment will benefit directly. Moreover, those who are left behind will probably benefit from the upward pressure

exerted by the competition on secondary labor market wages and benefits. And in the process, the production and delivery of public services, which are now in critically short supply, will be expanded.

MANAGERIAL RELATIONS WITH DISADVANTAGED WORK GROUPS: SUPERVISORY EXPECTATIONS OF THE UNDERPRIVILEGED WORKER

There is a theory that newly hired disadvantaged workers, and disadvantaged trainees, will learn faster and work better if their supervisors expect them to do so. This theory of "self-fulfilling prophecy" was tested in this study through five work-training situations: Manpower Development and Training Act (MDTA) training courses for welders, auto mechanics, and presser machine operators; Neighborhood Youth Corps in-hospital training for nurse aides; and company vestibule training for electronic assemblers.

The results are not entirely clear cut. However, there is considerable support for the view that supervisors can, by changing their own expectations about disadvantaged workers, help the workers break out of the self-perpetuating cycle of low expectations and poor performance.

Introduction

Managerial relations with disadvantaged and minority groups have received an increased amount of attention from writers and practitioners in the fields of industrial and personnel relations. The area is replete with loosely structured descriptions and controversial stands, few of which have been supported or refuted by empirical test. The major purpose of the study on which this report is based was to develop an interrelated set of theoretical propositions which are directly relevant to problems in managing the underprivileged worker and to test them operationally to provide useful information for training managers. More specifically, the author intended to show that disadvantaged employees from whom supervisors expect greater ability would tend to exhibit such ability in superior work performance. Implications of this effort should be useful in training programs designed to achieve more effective use of human resources.

Before proceeding further, two terms should be defined:

Disadvantaged individuals are poor persons who are unemployed or underemployed and possess one or more of the following characteristics: they have dropped out of school, are under 22 or over 44 years of age, are handicapped, and/or are members of a minority group.

Expectations are defined as significant social and psychological influences affecting behavioral motivations. Specifically, they describe an individual's perception of the likelihood that a behavioral event will occur.

The effect of management expectations on trainee performance was explored in five organizational experiments in which supervisors were led to believe, at the beginning of training and employment relationships, that certain of their trainees/employees could be expected to show improvement during the course of training or work. In three institutional training programs, supervisors were told that these predictions of probable training performance were based on tests administered before training began, but actually the individuals designated as having high aptitude potential were randomly chosen. In two work-training programs, personnel records were altered to achieve similar effects.

Approximately 20 to 25 percent of each trainee group were randomly selected to serve as the test group; the remainder of each group were controls. A variety of tests and observations were made of trainee performance during training, and ratings and performance measures were taken and interviews conducted with supervisors and trainees after training was completed. These measures were subjected to statistical analysis to determine if the experimental ("high achievement") and control groups differed as expected.

Conceptual Model

The conceptual model underlying this study specified the nature of the relationship between worker performance and supervisory expectations. Stated briefly:

1. A worker's performance depends on what his supervisor expects of him, to the extent that his supervisor has an influence on him.

2. Supervisory influence is, in turn, a product of the supervisor's motivation, expectation, and incentive to achieve success in training the worker.

3. Supervisory expectation of achieving success is related to the quality of the supervisor's communications.

4. Hence, worker performance is dependent on supervisor communications, motivation, and incentive to achieve success in training the worker.¹

One implication of this relationship is that, if the supervisor's communication of his expectation of a worker's success reaches a high level while worker performance remains relatively low and the supervisor persists in holding the expectancy, then an improvement in worker performance follows. This effect is a form of self-fulfilling prophecy, a much-studied phenomenon.

"Self-fulfilling prophecy" is the name given to a sequence of events by which a person, believing that a certain event will occur, changes his behavior in such a manner as to produce the desired (or dreaded) event. An example of this, from the world of finance, occurred when people believed that banks were not operating on sufficient funds and that disaster was imminent. This belief caused a run on the banks which, while they could

handle the normal amount of withdrawals, could not cope with this heavy demand and were forced to close. In short, the people's fears led to actions which brought about the feared event.²

There is an important limitation to the phenomenon: self-fulfilling prophecy comes into play only when the prophet relies on an inaccurate source of information to shape his beliefs. It is only when a person's interpretation differs from what is actually taking place that his beliefs themselves exert influence to change future reality in the direction of his perception. (Obviously, when he is accurately interpreting current reality, there is no room for such a change and no impetus for it.)

Self-Fulfilling Expectancies in Five Occupations

The power of self-fulfilling prophecy to influence trainee performance was evaluated in five settings: MDTA/institutional training courses for welders, auto mechanics, and presser machine operators; Neighborhood Youth Corps in-hospital training for nurse aides; and company vestibule training for electronic assemblers. Table 1 shows, by occupation, the average rank in performance (using different criteria for measuring performance in each training course) for the experimental high achievement personnel (HAPS) and the undesignated others (labeled average achievement personnel or AAPS). Lower ranks indicate higher performance.

Supervisors' ratings and their responses in interviews indicated more favorable attitudes, beliefs, and evaluations of workers designated as HAPS. Supervisors expecting better performance rated trainee HAPS as being more knowledgeable about jobs, producing a higher volume of neat and accurate work, showing greater ability to learn new duties, having more initiative, giving better cooperation, exhibiting more logic in job tasks, and so on.

¹Stated mathematically, the relationship of worker performance to supervisory expectations is $W_p = f(S_c^2 \times M_s \times I_s)$ where W_p = worker performance; S_c = supervisor communication; M_s = supervisor motivation; and I_s = supervisor incentive.

²The manner in which prophecy becomes reality may be understood in terms of the psychological theory of cognitive consistency (which postulates a drive to reduce disparities between perceptions—in this case the disparities between the supervisor's expectations and the worker's estimates of his own ability) and of the sociological concept of role conflict (which also involves a drive to reduce the conflict between contradictory expectations).

TABLE 1. AVERAGE RANKS OF PERFORMANCE RATINGS¹ IN FIVE TRAINING EXPERIMENTS

Training occupation	Number in sample	Average rank of performance ratings ^{1 2}	
		Test group (HAPS)	Control group (AAPS)
Welders	20	3.6	9.4
Auto mechanics	19	4.3	9.8
Presser machine operators	17	5.0	9.2
Nurse aides	17	7.0	9.6
Electronic assemblers	21	7.8	11.3
Average . . . . .	.....	5.54	9.86

¹ Performance ratings are based on absences, peer ratings, supervisor ratings, and skill measures; for details, see tables 2 to 6. Rankings were averaged for each trainee to determine an average class rank per individual. The class rankings were then averaged for the test and control groups to yield the figures shown. That is, in three of the projects performance differences were so large that it was unlikely that they occurred by chance.

² Control group average ranks were significantly poorer than the test groups in all programs but the nurse aides'.

In all three of the MDTA courses, workers earned both superior performance and higher supervisory evaluations when their supervisors expected such performance. Results for nurse aides and electronic assemblers did not show significant superiority of the HAPS. However, in each of the five classes, at least one measure of trainee performance did indicate HAPS superiority.

Means by which these effects were brought about appear more direct than indirect, although unintentional. In the two classes for which negative findings were obtained, organizational policies prevented any detailed or inside search to determine supervisors' methods. In the MDTA training, frequent checks were made to find out supervisors' behavioral relations with trainees. Organizationally, and in terms of work flows, job assignments, closeness of supervision, and so forth, it appeared that those in the test condition were given more preferential and direct assistance. But when asked, neither workers nor supervisors reported any trainees as receiving closer attention. Nonetheless, research information on the organization of work and training activity

showed that supervisors were more friendly, interested, encouraging, and enthusiastic when supervising trainees designated as HAPS and worked more closely with them. From the investigations reported here, the author concluded that an underprivileged adult's training performance as well as his work habits can be directly and favorably affected by supervisory expectations.

Detailed ratings for the individual training groups in which the experimental group was rated superior are given in Tables 2, 3, and 4. For presser machine operator (table 2), in which only peer ratings and separations distinguished the HAPS from the control, or AAPS subjects, the researcher attributes the lack of significance in other ratings primarily to the presence in the HAPS groups of the only male presser trainee, who was not accepted as a group member by the supervisor or his fellow trainees. His extremely low evaluation, coupled with the small number of trainees (17), reduced differences between HAPS and AAPS below significance. The data for welders (table 3) support the hypothesis that supervisor expectancy can positively affect trainee performance. Table 4, showing data for auto mechanic trainees, also supports the study's main hypothesis.

TABLE 2. CHARACTERISTICS AND AVERAGE RANKS OF PERFORMANCE RATINGS, PRESSER MACHINE OPERATORS

Characteristic or performance measure	Test group (HAPS)	Control group (AAPS)
Age	23.5	25.4
Education	8.3	8.9
Mechanical comprehension:		
Test score	21.8	17.8
Percentile	25.0	17.5
Supervisor rating	26.5	22.0
Peer rating: ¹		
Most like to work with	71.25	² 115.0
Most like to be with	70.4	² 112.4
Overall performance	56.5	² 114.6
Absences	1.25	1.92
Separations	0	² .38
Average rank ¹	5.0	² 9.2

¹ Lower rank represents more favorable performance.

² The control group's performance was significantly poorer than the test group's on these measures.

TABLE 3. CHARACTERISTICS AND AVERAGE RANKS OF PERFORMANCE RATINGS, WELDERS

Characteristic or performance measure	Test group (HAPS)	Control group (AAPS)
Age	28.4	27.0
Education	7.4	7.3
Mechanical comprehension:		
First test	30.6	25.8
Percentile	22.5	¹ 13.4
Second test	35.6	¹ 21.3
Gains and losses	+5.0	-2.7
Supervisory rating	37.8	¹ 24.6
Peer rating: ²		
Most like to work with	68.2	¹ 99.7
Most like to be with	71.8	¹ 92.4
Overall performance	47.2	¹ 109.3
Absences .....	.4	¹ 8.9
Separations	0	¹ .53
Work sample test:		
Times	1.4	¹ 5.4
Days	1.4	¹ 4.0
Weeks to learn fundamentals ..	6.0	¹ 10.0
Essentials test	98.0	¹ 88.3
Average rank ²	3.6	9.4

¹ The control group's performance was significantly poorer than the test group's on these measures.

² Lower rank represents more favorable performance.

TABLE 4. CHARACTERISTICS AND AVERAGE RANKS OF PERFORMANCE RATINGS, AUTO MECHANICS

Characteristic or performance measure	Test group (HAPS)	Control group (AAPS)
Age	20.8	23.1
Education	8.8	8.0
Mechanical comprehension:		
First test	26.6	34.3
Percentile	15.8	27.2
Second test	33.7	¹ 11.4
Percentile	13.8	¹ 3.8
Gains and losses	+7.1	¹ -22.9
Supervisory rating	28.6	¹ 11.8
Peer rating: ²		
Most like to work with	91.0	¹ 146.3
Most like to be with	99.4	¹ 142.4
Overall performance	70.0	¹ 151.1
Absences	1.4	2.9
Separations	0	¹ .57
Essentials test	77.2	¹ 59.5
Average rank ²	4.3	¹ 9.8

¹ The control group's performance was significantly poorer than the test group's on these measures.

² Lower rank represents more favorable performance.

TABLE 5. CHARACTERISTICS AND AVERAGE RANKS OF PERFORMANCE RATINGS, NURSE AIDES

Characteristic or performance measure	Test group (HAPS)	Control group (AAPS)
Age	20.8	23.8
Education	9.0	8.7
Science Research Associates		
Test ¹ levels	8.8	7.0
Essentials tests	99.1	² 94.1
Practical knowledge tests	92.9	² 92.7
Final exam	96.5	² 90.2
Supervisory rating	22.3	20.2
Peer rating	2.3	2.2
Absences	2.0	3.8
Separations .....	.5	.08
Average rank ³	7.0	9.6

¹ A test of reading and arithmetic skills.

² The control group's performance was significantly poorer than the test group's on these measures.

³ Lower rank represents more favorable performance.

Data for nurse aide trainees (table 5) do not support the self-fulfilling prophecy hypothesis.³ However, this may have been due, in part, to personal problems outside of training which led to the withdrawal of two of the four HAPS trainees during the program. Supervisors, who had previously spoken highly of the two young women who withdrew, downgraded their ratings considerably afterward.

Findings for electronic assemblers (table 6) show only absences to significantly differentiate HAPS from the control group.⁴ Less information is available for this group than for the others, partly because of the nature of the project. This experiment was more nearly concerned with worker performance than trainee performance since, after 2 weeks of training, all were placed in assembly line jobs. Moreover, the trainee group had a higher social status and was less homogeneous than the others: workers' previous jobs ranged from busgirl to musician. Two women in the control group were working to assist their husbands in college.

³Editor's Note: Although King does not consider this possibility, what may have occurred here is that reality—in the form of factual knowledge provided in the first 2 weeks of classroom training and, in part, the experience of the nurse aide trainers—provided feedback on which supervisors placed greater credence. This factual information may have limited the extent to which expectations exceeded performance and hence may have limited the power of self-fulfilling prophecy.

⁴See footnote 3. A similar effect might have been produced in the case of electronic assemblers, whose supervisor (and the assemblers themselves) had immediate feedback on performance on the assembly line.

TABLE 6. CHARACTERISTICS AND AVERAGE RANKS OF PERFORMANCE RATINGS, ELECTRONIC ASSEMBLERS

Characteristic or performance measure	Test group (HAPS)	Control group (AAPS)
Age	26.0	27.3
Education	11.3	10.6
Soldering certification test ...	93.0	93.9
Absences	1.25	¹ 2.4
Separations .....	.5	.29
Supervisory rating	15.4	14.8
Pay increase .....	.75	.71
Average rank ²	7.8	11.3

¹ The control group's performance was significantly poorer than the test group's on this measure only.

² Lower rank represents more favorable performance.

In summary, effects of supervisor expectancies were shown strongly across multiple criteria for performance in the three MDTA programs, with only weaker influences shown in the nurse aide and electronic assembler studies. It is likely that differential attention to those in the experimental groups was largely responsible for the results. Whatever the influences may have been, the studies showed that supervisors' expectations of underprivileged workers' performance can have self-fulfilling effects. Where supervisors were experimentally influenced to expect that certain trainees would show superior performance, there was some evidence in each study to indicate that such performance actually developed.

Implications and Recommendations

This research has definite implications for finding a way out of the self-perpetuating cycle of low expectations and poor performance which characterizes the

work of many disadvantaged persons. It suggests that, in order to motivate underprivileged workers to seek more responsibility on jobs, supervisory staff within organizations must expect that disadvantaged workers are capable of more than has been realized. Instead of focusing on personal characteristics of the worker to bring about performance changes, it may be more valuable to focus on an external force—the supervisor, whose expectations may have “drive” value in helping the worker change his behavior.

Where information on supervisor behavior was available in the study, it indicated that the means of bringing about expectancy influence—that is, of conveying the supervisor's expectations to the trainee—were more direct than indirect, though unintentional. If worker performance is to be improved systematically, these means should be made conscious and intentional. Careful observation of the behavior of participants in expectancy experiments is required to determine the nature of the special attention of supervisors. However, some clues were provided in the present study, in the observations by HAPS that their supervisors were friendly, interested, and encouraging and that the trainees were free to discuss problems and control their own efforts (as opposed to AAPS perception of stringent supervision in training). Role playing, in which supervisors act out their own behaviors or those of a trainee, may prove to be a valuable technique for teaching supervisors to convey high performance expectations to their trainees or subordinate workers.

There has been some criticism of the techniques used in this study (and elsewhere) by those who view the training situation as one in which devoting attention to any particular trainee is always done at the expense of another. However, it is possible that increased expectancy may be made to operate at the group level in a manner which would increase the performance of the group as a whole.

INTRAMETROPOLITAN MIGRATION OF WHITE AND MINORITY GROUP HOUSEHOLDS

What effects will government policy that subsidizes industrial location in the central city have on residential segregation and minority employment? Previous studies have attributed the high rate of black joblessness to segregation in the housing market in part, coupled with the decentralization of industry. The present study examines the relationship between location of the home and the head of the household's job within a metropolitan area and suggests that the effects of segregated housing on his job location may have been overestimated in the past.

Differences were found in the housing service consumption patterns of the four ethnic groups examined— white, black, Spanish-surnamed, and Oriental. For all groups, however, it was found that households are much more likely to choose their home location on the basis of job location rather than income. Thus, if the government seeks to improve the income of minority groups by subsidizing industry in the central city, it may only reinforce the racial and income splits between suburb and central city.

While previous studies of intrametropolitan migration have equated the central business district (CBD) with job location to measure the distance between the home and job locations, this study develops a measure of home and job locations that does not depend upon such an equation. The measure allows for the development of a more flexible model that treats home and job location as mutually dependent phenomena rather than identifying one as the cause of the other. The model is tested with data drawn from the 1965 Bay Area Transportation Study Commission (BATSC) Home Interview Study.

Introduction

The principal questions asked in this study are: What factors are important in explaining the decentralization of the metropolitan population? Do they differ between white and minority group households?

To answer these questions, the study analyzes the decision that led to the household's location. It was assumed that the household would choose the site most attractive to it. The attractiveness of a particular site can be explained in three ways: (1) Accessibility to other residential and business locations, (2) environmental characteristics, and (3) costs associated with the site. The first two categories are viewed as benefits for the household and the third is the cost that it must pay for

those benefits. Accessibility is defined by distance from the home to both the job location and the central business district. Environmental characteristics include, in addition to the physical amenities, the quality of public services such as schools, police protection, and libraries and the socioeconomic characteristics of the neighborhood. The costs include the locational rent (the additional costs to the household attributable to the desirability of the location, e.g., availability of churches, parks, shopping, etc.), the property tax, and the costs of travel to the place of work and to other places of interest in the metropolitan area.

If accessibility, environment, and costs, defined in this way, can be quantitatively measured, then every residential site within a metropolitan area can be described by indexes representing the values of each

attribute for that site. For a particular household, the appropriate values would depend on such factors as income, locational rent, family size, education, ethnic identity, number of employed persons, and the type of job of the head of household. Such information on the attributes of a household site could be used for analyzing what induces households with a given set of characteristics to move within the metropolitan area.

This approach requires a theoretical model and sufficient data to test the model. Unfortunately, data are not available for property taxes and all of the variables concerning the environmental characteristics. Data on the quality of schools, libraries, police force, and other public services are just becoming available but are not yet in a form that can be quantified and used in a locational model. Thus, it is necessary to assume that the attributes of accessibility and locational rent costs completely describe the attractiveness of a site to the household. In addition, accessibility and locational cost must be measured with respect to a particular reference point, the central business district (CBD). This simplified approach cannot answer questions of how neighborhoods change and why people move from one particular area to another. However, it can be used to study questions of a broad nature concerning the structure and form of a metropolitan area.

Methodology

The model presented in this study is a combination and extension of two models, one by William Alonso¹ and the other by Richard Muth.² (The mathematical forms of all three are given in the Appendix.) It is tested on households located in the San Francisco Bay Area, with a stratified sample of homeowners and renters. Each of these categories is further stratified into white, black, Oriental, and Spanish-surnamed households. Driving time by automobile between two locations is used in the study as the measure of the distance separating them, since a major hypothesis of this model states: The household is motivated to locate its home or job so as to minimize commuting time.

Theoretical Models of Residential Location

In the Alonso model the individual makes three decisions: (1) how big a lot to buy, (2) how far from the city center the lot will be situated, and (3) how much of all other goods to buy. The individual will choose among alternatives to get the best combination for himself. If the individual has an ideal lot size in mind and an ideal distance he is willing to travel, he will have to balance these ideals against the real opportunities available to him. He will trade off the size of lot and the distance to the city center until any additional benefit derived from the ratio of distance to size is equal to the ratio of the marginal cost of distance to the marginal cost of land. The marginal cost is the price for an added unit of benefit or an added unit of cost (e.g., 1 square foot more land, or 1 mile closer to the job). Alonso uses a set of equations to analyze the effects of a change in income on the choice of location, examining the bid-price curve of an individual to reveal the relationship between income and location. The bid price is the price that would leave the individual's level of satisfaction unchanged as the amount of land and access to the CBD are varied. In other words, recognizing that the ideal is not possible, the individual has a range of possible combinations of land size and distance which he equates personally to the ideal.

The Alonso model makes restricting assumptions about the nature of the residential situation, limiting the kinds of choices an individual is presumed to make. The most restrictive of these assumptions is that all business activity takes place in the center of the city, whereas work places are in fact decentralized.

Whereas Alonso is interested in land and density (space), Muth is interested in housing services (i.e., housing and land). Utility or benefit is a function of the quantity of housing services and the composite good (all other goods the individual needs). In both models the price for housing services, or land, is made a function of distance. Both assume that all businesses are located in the CBD. Both are defined in terms of individual household decisions, yet are tested with data aggregated by census tracts.

The Extended Model

In the extended model presented here, the household derives satisfaction from consuming housing services and

¹William Alonso, *Location and Land Use: Toward a General Theory of Land Rent* (Cambridge: Harvard University Press, 1964).

²Richard Muth, *Cities and Housing* (Chicago: The University of Chicago Press, 1969).

accessibility directly. It extends the Alonso and Muth models in two ways: First, it does not assume that all jobs are in the CBD, and second, it enlarges the set of choices facing the household. The choice variables, which are determined simultaneously by the household, can be grouped into two categories: (1) Location decisions in which the household chooses the location of both home and work and (2) housing service decisions in which the household chooses the rent, number of rooms, and type of structure. Six equations describe the structural relations of the extended model.

The first equation states that residential location depends on income, job location, and the number of employed members of the household.

The second states that job location is a function of the distance from home to the CBD and the location of jobs in the industry where the head of the family is employed and thus is a rough measure of the difficulty of finding a job near home.

In the third, the assumption is that the rent depends on the quantity (number of rooms) and quality (age of the structure) of housing consumed and its location in relation to the CBD.

The quantity of housing consumed, the fourth equation, assumes that, if housing is a normal good, the size of quarters should increase with income, that the size will be lower if the household is headed by a woman with less time for household chores, and that size will decrease as the number of dwelling units in the structure increases. With income and the other explanatory variables held constant, the household can increase its consumption of housing (more rooms) by inhabiting a structure of lower quality, i.e., the number of rooms and the age of the dwelling would be inversely related.

The fifth equation explains the decision of the household on the type of structure in which to live, ranging from a single-family dwelling to a large apartment building. In effect, the type of structure serves as a proxy for the life style of the household, which is influenced by the number of workers in the household and the sex and education of the household head, subject to the size of the family and how far from the center of the city it wants to live.

To measure the difficulty of finding a job at the home location, the sixth equation examines the driving time between the home and the city center less the average driving time between the CBD and all area jobs in the industry where the head of the household is employed. The latter is used as a proxy for job location and is relevant to the hypothesis that the family desires to minimize commuting time. Thus, if government offices

are located at an average distance of 3 miles from the CBD, it is assumed that a government worker would enjoy a maximum saving in commuting time if he lived approximately 3 miles from the CBD.³

The Data

The Home Interview Study, conducted in 1965 by the Bay Area Transportation Study Commission (BATSC), is the data base employed in this study. The area covered by BATSC included the nine counties of Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, and Sonoma, containing 90 incorporated cities and a population of more than 4 million people. The study consisted of approximately 30,000 short-form interviews selected randomly throughout these nine counties. A subsample of about 3,100 households was given long-form interviews to obtain additional information on household mobility and migration. Each interview obtained information on the number of household members and trips made by them during a given day. All sampled households were described by location, number in household, number of drivers and vehicles available, type of housing, income, and type and location of work. Each person sampled was described by age, sex, education, employment status and location (for head of household), occupation, and family relationship. From the data on household and job location, BATSC developed a matrix giving driving times between any two locations in the area; these driving times were used in this study as the measure of distance between the city center and home or job.

This data base yielded complete information on the items needed to test the model for over 3,000 families. Because of problems in the sample, the short-form survey data were used for minority group households and the long-form data for whites.⁴

³Editor's note: Since the measures of home and job location both relate to the CBD, the two distances should be added, rather than subtracted, for a person who lives on one side of the SMSA and works on the other. Hence, the method of computation, in which distance to job is subtracted from distance to home, understates commuting time for such persons.

⁴Editor's note: Because the sample size for minority members of each group became too small after allowance was made for miscoded and incomplete questionnaires, it was decided not to use the long form for them. That form carried additional information about changes in household composition, residence type, and location history, reasons for moving, and reasons for selecting the present housing, some of which was used in testing basic hypotheses underlying the model but did not enter into the equations themselves.

Testing of the Model

The model can be divided into two parts, one dealing with the location of housing and employment (equations 1 and 2) and the other with the variables that describe the housing consumed (equations 3, 4, and 5). Equation 6 is used to derive the value for job location (THSIC) used in equation 2. Concentrating on the first two locational equations simplifies the decision on how far the sample should be stratified. In a five-equation model one could get conflicting results on the need for stratification. Three stratifications are explored as follows: (1) Race of the head of household—white, black, Oriental, or Spanish-surnamed; (2) tenancy status—renter or owner; and (3) position of the household in the life cycle—no children and head less than 35 years old; children under 15 years old; head of household 35 to 65 years old, with no children under 15; and head of household over 65 years old. Since it was anticipated that some of the stratifications would reveal interesting differences, the model is estimated so that distinctive characteristics are retained insofar as possible (e.g., black homeowners are considered rather than all blacks or all homeowners).

The model identifies the explanatory variables for each choice variable and predicts—in most instances—whether they have a positive or a negative effect on the choice. The equations are fit in logarithmic form wherever possible so that effects of specific relationships can be estimated directly. One can tell immediately which explanatory variable has the greatest influence on a choice variable.

Findings

The most important factual finding was the positive elasticity between home and job location: for every 10 minutes' increase in driving time between the job location and the central business district, there was an increase of 8 to 12 minutes (varying by ethnic group and housing tenure) in the driving time between home and the central business district. Job location had a much more frequent and a much larger influence on the home location than could be explained by chance (that is, it had a strong and consistent level of statistical significance). The corresponding relationship between job and home location was also consistently positive and

strongly significant. In the two locational equations, explaining home and job location, all relationships predicted by the model were upheld. The model did not predict the direction of the income elasticity but did identify income as a significant explanatory variable.

Home location was much more responsive to job changes than to income changes. The elasticity with respect to job location was about 10 times that for income. The variable relating the job location to the geographic distribution of all jobs in the industry was significant with the predicted sign. This has important implications for public policy: the decentralization of jobs in a metropolitan area will have strong influence on its residential distribution.

The three equations explaining housing consumption generally had the relationships predicted by the model. Rent (for homeowners, an imputed payment based on the estimated value of the dwelling unit) was directly related to the number of rooms and the age of the dwelling unit and inversely related to the driving time from the city center. The number of rooms in the dwelling unit was directly related to the income and size of the household. In the equation that explains type, only the inverse relationship between density (i.e., number of families per structure) and number of rooms was found, as predicted by the model. This equation was the weakest of the five.

Sources of Differences in Home and Job Location

Home location decisions differed between renters and homeowners and also among white, black, Spanish-surnamed, and Oriental households. The income variable was more significant for renters than for homeowners in all ethnic groups. Among black renters, the home location converged toward the city center as income rose, but the opposite was true for black homeowners. This could be due to a qualitatively different market for blacks renting than those owning their own homes. The relationship of home location to job location was about the same for Oriental, Spanish-surnamed, and white respondents and somewhat higher for renters than for homeowners in all three ethnic groups. Among blacks, however, home location was far less responsive to job location for renters than for homeowners.

For renters, both black and white, the stage of the life cycle had little effect on home location. Among homeowners, however, income and the number of

employed persons in the household exerted a different influence on home location at different stages of the life cycle for whites, and the effect of job location on home location differed for blacks over the life cycle.

The effects of life cycle stage on job location were not important for white homeowners or renters. The same held true for black homeowners. The job location of black renters with young children in the household, however, was far less sensitive to either home location or the area distribution of jobs than that of black renters with no young children.

Testing the Basic Assumptions

The extended model developed for this study assumes that a household will locate its jobs or home so as to minimize commuting between home and work, holding everything else constant. Three important assumptions underlying the model and its empirical verification were explored.

One assumption is the minimization of commuting time. Commuting time does not enter the model directly as a choice variable but indirectly through determination of the home and job locations. However, this assumption can be tested by looking at households that have changed either their home or job location. The statistical test was designed to test only white male-headed households that had changed their residence location. The results of this test led to the interpretation that households behave so as to minimize commuting time between home and job. Extending the statistical relationships found in the test to the data for minority group households led to the conclusion that they did not want to, or were unable to, reduce commuting time as much as white households. Minority group households were less likely to reduce commuting time if they changed their job location than if they changed their residence location.

The second assumption states that job location and home location are determined simultaneously. This assumption is tested by examining only those households that have changed home location without changing job location. This means that changes in household location would result from changes in any other variable in the model, except job location. It was found that allowing job location to be determined simultaneously with other variables made the model more flexible, because it provided additional information to the system, reflected in higher elasticities, generally with greater statistical significance.

The third assumption—which allowed the use of the Bay Area Transportation Study Commission survey—is that with micro (household) data and a structural model of locational behavior, it is possible to draw longrun implications from cross-sectional data. The data used hitherto are based on job location and home location at the time of the survey of a cross section of the Bay Area population—the white respondents to the long-form questionnaire and the respondents of other ethnic groups to the short-form questionnaire, as previously indicated. Tests similar to those performed on the cross-sectional data were performed on data for the whites who had moved within the 18 months preceding the survey. From these tests it was concluded that the elasticity of home location with respect to both job location and income was very similar for the recent movers and the full cross-sectional sample.⁵ Thus, the assumption was found to be justified.

Comparison of White and Minority Group Households

Two questions can be asked in comparing white and minority group households: Are there significant differences in the responses of the two groups to similar situations? Is there a consistent explanation of the observed behavior pattern(s)?

Three variables describe the housing consumption behavior of the household: Monthly rent, number of rooms, and type of structure (that is, equations 3, 4, and 5). White and black renters were almost identical in all three relationships. However, this similarity did not extend to homeowners. Oriental and Spanish-surnamed renters responded in a fashion similar to other renters, but some of the explanatory variables differed more between these two groups than between them and other renters.

In general, the similarities between white and black households outweighed the differences when compared on the basis of monthly rent, number of rooms, and type of structure. Thus, it was concluded that these two groups had similar tastes in the kind of housing services they desired to consume and that observed differences in the quality, quantity, and location of their housing could be attributed to differences in income, family size,

⁵Editor's note: Since sample size of the long-form survey precluded similar tests for other ethnic groups, it is not known whether this finding would apply to groups other than whites.

number of extra workers, and the type of industry in which the head of household was employed.

In the equation explaining residential location, white and Spanish-surnamed households behaved almost identically. The similarity between black and Oriental households was reflected in the small influence of income, which was negative for renters but positive for homeowners. However, job location had more influence on home location for Oriental households than black households among renters, but the reverse was true among homeowners. Black renters had the lowest elasticity with respect to job location; black homeowners, the highest. One hypothesis consistent with these results is that black households face a geographically segregated housing market for renting but not for purchasing homes.

Conclusions

Compared with previous works dealing with the interaction between residential segregation and employment location, this study has the advantage of simultaneous determination of the residential and the employment location. The results of this study show that home and job locations are much more responsive to each other when they are treated as dependent upon one another than when, as in earlier studies, one factor is

treated as determining the other. While it can be concluded from this study that segregation in the housing market would indeed affect the location of employment of black households, the results indicate that Kain's⁶ estimate of job loss due to this segregation should be revised downward. While he correctly identifies the serious problem of decentralization of employment in the metropolitan area, his model fails to treat home location as dependent upon job location—only the opposite. Because of this one-way causality, his conclusions may be too strong. In fact, results of the present study support the conclusion that employment dispersal would lead to the residential dispersal of blacks to ghettos in the suburbs: the “problem” of the central city may be the “problem” of the suburbs in the near future.

Since job location is about 10 times as influential as income in determining home location, policies to subsidize jobs in central-city poverty areas will attract new minority residents or keep the old ones in these areas. The pull of jobs in the central city would offset the pull of the suburbs which would come with increased income. Thus, a policy which is meant to alleviate the plight of the city center may only strengthen the racial and income split between suburban and central-city residents.

⁶J. F. Kain, “Housing Segregation, Negro Employment, and Metropolitan Decentralization,” *Quarterly Journal of Economics*, vol. 82, May 1968, p. 175-195.

Appendix

Alonso's Model

$U = U(c, q, t)$ subject to the income constraint:
 $y = p^c c + p(t)q + k(t)$ where y = the individual's income;
 p^c = price of the composite good; $p(t)$ = price of land;
 $k(t)$ = cost of commuting. Alonso assumes: $\frac{dp(t)}{dt} < 0$,

$\frac{dk(t)}{dt} > 0$, $\frac{dk(t)}{dy} = 0$, and separability of the utility functions. Thus:

$$\text{Max}_{c, q, t, \lambda} \left\{ U(c, q, t) + \lambda [y - (p^c c + p(t)q + k(t))] \right\}$$

The first-order conditions for max (or min) are:

$$\begin{cases} U_c - \lambda p^c = 0, \\ U_q - \lambda p(t) = 0, \\ U_t - \lambda \left(q \frac{dp(t)}{dt} + \frac{dk(t)}{dt} \right) = 0. \end{cases}$$

This yields the usual ratio:

$$\frac{U_t}{U_q} = \frac{q \frac{dp(t)}{dt} + \frac{dk(t)}{dt}}{p(t)}.$$

The slope of the bid-price curve is $dp_i(t)/dt$, when i refers to a particular level of satisfaction.

$$\frac{dp_i(t)}{dt} = \frac{U_t}{U_q} \frac{p_i(t)}{q} - \frac{1}{q} \frac{dk(t)}{dt}.$$

Since $dp(t)/dt < 0$, an increase in the slope means a decrease in t .

Muth's Model

Whereas Alonso is interested in land and density (space), Muth is interested in housing services. Utility is a function of the composite good, c , and the quantity of housing services, h ; $U = U(c, h)$, subject to the income constraint, $y = p^c c + p(t)h + k(t, y)$.

The Dissertation Model

1. $THC = f_1(Y, TJC, NEMP)$
2. $TJC = f_2(THC, THSIC)$
3. $RENT = f_3(THC, RMS, AGEHS)$
4. $RMS = f_4(Y, AGEHS, TYPE, SEX, SHH)$
5. $TYPE = f_5(RMS, NEMP, ED, SEX, THC)$
6. $THSIC = THC - SIC_k$

Income, Y , is the household's total income. Size of household, SHH , is the total count of its members. ED is the education of the head in years of school completed, with a maximum of 17. $NEMP$ is the number of employed persons (other than the head). SEX is the sex of the head. TJC is the round-trip driving time from job location to the central business district. THC is the round-trip driving time from home location to the central business district. SIC_k is the average round-trip driving time from the location of all jobs in a particular standard industrial classification to the central business district. (BATSC provided a tabulation by Standard Industrial Classification (SIC) code of the number of jobs that were in each map zone in the Bay Area.) $THSIC$ is the difference between THC and the SIC_k of the household head.

The data on housing characteristics consisted of: PV , the property value (owner estimate of market value); $RENT$, the monthly rent paid by the household (for homeowners, $RENT = PV/K(PV)$); $TYPE$, the type of structure (ranging from single family to 20 or more unit structures); RMC , the number of rooms in the structure (excluding bathrooms); $AGEHS$, the age of the structure determined by the date of construction; YRH , the year the household began residing in the current structure; and YRS , the year the head of the household began working at his current job—both variables used in the test of assumption three.

Equations were calculated separately for renters and homeowners, with each group subdivided into four ethnic groups: White, black, Oriental, and Spanish-surnamed.

The functional form of the equations used in fitting the model to the cross-sectional data to test empirical validity was:

$$\text{Ln(THC)} = a_0 + a_1 \text{Ln(Y)} + a_2 \text{Ln(TJC)} + a_3 \text{NEMP}$$

$$\text{Ln(TJC)} = b_0 + b_1 \text{Ln(THC)} + b_2 \text{THSIC}$$

$$\text{Ln(RENT)} = c_0 + c_1 \text{Ln(THC)}$$

$$+ c_2 \text{Ln(RMS)} + c_3 \text{AGEHS}$$

$$\text{Ln(RMS)} = d_0 + d_1 \text{Ln(Y)} + d_2 \text{TYPE}$$

$$+ d_3 \text{AGEHS} + d_4 \text{SEX} + d_5 \text{SHH}$$

$$\text{TYPE} = e_0 + e_1 \text{Ln(THC)} + e_2 \text{Ln(RMS)}$$

$$+ e_3 \text{NEMP} + e_4 \text{ED} + e_5 \text{SEX}$$

THE IMPACT OF THE WELFARE SYSTEM ON BLACK MIGRATION AND MARITAL STABILITY

Recent debate over the welfare system is rooted in the widely held belief that public assistance programs are both inadequate and counterproductive. This debate has generated a number of popular—yet untested—convictions about the relationship between welfare and migration and welfare and marital stability. This study treats these convictions as hypotheses to be tested, specifically as they apply to the black community.

The results of the study lead to the following conclusions: (1) The decision of blacks to migrate from the South appears to be unrelated to welfare opportunities in urban centers of the North and West. (2) But once the decision to move has been made, the destination of black migrants from the South is significantly influenced by the welfare opportunities in the cities of destination. (3) The availability of welfare has little, if any, effect on the rate at which low-income persons leave northern and western central cities. (4) Welfare opportunities significantly affect family instability, but not, apparently, directly as a result of AFDC regulations. Instead, given an unstable marriage situation, the regulations then have the effect of lowering both the benefits derived from the marriage and the costs to the poor of marital disruption, i.e., in effect, they provide a system of government-subsidized alimony payments.

These results are based on data drawn primarily from the censuses of 1950 and 1960 and are tested by use of two models: a migration model and an economic model of family stability.

Welfare Problems and Causes

In recent years, the welfare system has come under attack from public officials, welfare administrators, the general public, and the poor themselves. Oft-repeated speculations have become accepted as fact, while little has been done to prove or disprove them. This study attempts, at least partially, to make such a measurement by examining the influence of the welfare system on both the migration patterns of the poor and the marital stability of welfare recipients.

The migration of blacks has been one of the Nation's most important demographic changes. At the turn of the

century, approximately 90 percent of all black people lived in the South; by 1969, only 53 percent of them lived there. Seventy-two percent of the net migration of blacks between 1910 and 1950 was to the six States of California, Illinois, Michigan, New York, Ohio and Pennsylvania.¹ Within these States, roughly 90 percent of the black in-migrants have ended up in the central cities of standard metropolitan statistical areas (SMSA's) larger than 250,000. At a time when the capital stock (e.g., housing, buildings, sewage disposal systems) of

¹ Philip M. Hauser, "Demographic Factors in the Integration of the Negro," in *The Negro American*, ed. by Talcott Parsons and Kenneth B. Clark (Boston: Beacon Press, 1967), p. 75.

many cities is crumbling, the unskilled migrant has added a further burden to the financial structure of the inner cities. One problem in treating this migration as merely an extension of general mobility is that, in 26 States, black net flows are moving in the opposite direction from those of whites. Previous research has shown significant differences in the response of each racial group to factors that determine migration.

Blacks, as a group, are more likely to be over-represented because of racial discrimination and its effects on education, skill levels, and work experience. In the South, especially, the mechanization of agriculture and racial antagonisms deriving from the civil rights and integration movements have spurred black migration. And blacks are less prepared for life in the cities than earlier waves of migrants.

Welfare opportunities are also a determinant of black migration, according to a recent hypothesis. Yet a number of arguments can be made to justify the feeling that this trend has only recently emerged. To begin with, in absolute terms, regional differences in welfare benefits (e.g., southern States vs. northern and western metropolitan areas) have increased considerably only in recent years while, in relative terms, inequality between regions has become greater from 1955 to 1970. These factors—together with relaxation in the administration of welfare regulations, increased caseloads, and the Supreme Court's abolition of residency requirements—have tended to increase the value of welfare benefits at the end of the migration trek.

There are reasons for believing that potential welfare recipients are more likely to respond to welfare differences today. The benefits have grown at the same time that the costs, both psychic and social to recipients have fallen. Welfare rights groups and antipoverty programs have broadened the distribution of information related to welfare opportunities while fighting to remove the stigma associated with receiving public assistance.

It thus seems plausible that welfare influences the migration of low-income persons, particularly blacks. But the specific forms of interaction between the two remain in question. Four hypotheses have been generated in the public debate.

The first is that niggardly welfare systems, particularly in the rural South, have forced many poor persons to leave. The problem is to test whether the poor are actually forced to leave jurisdictions having limited welfare opportunities.

A second hypothesis relates primarily to the choice of destination. Once the migrant has decided to leave, his

choice of destination could be in part contingent upon the welfare opportunities.

A third argues that some cities become sinks into which the poorly trained flow but rarely leave. The more beneficent a large urban area's welfare system, the less likely a family or individual is to look elsewhere for livelihood if it suffers unemployment or other problems.

The fourth suggests that the welfare regulations developed to administer the Social Security Act² tend to exclude most husbands and wives living together from receiving welfare benefits, and thus foster marital instability. This hypothesis is treated independently of the other three in this study.

The Migration Models and Data

The Migration Model

In order to test the first three hypotheses, an econometric model was constructed to describe the interrelationship between a number of factors affecting the decision to migrate.

The assumption underlying most analyses of migration is that the average person prefers to remain among familiar physical and social surroundings. Theories of migration provide testable hypotheses concerning which factors facilitate and which impede migration.

Human capital theory interprets migration as a form of investment in oneself. The individual selects the place to live that will provide him with the maximum benefit for his foreseeable future. Also, it assumes that the potential migrant is interested only in additional gain elsewhere. Against this potential gain are balanced the total costs, or investment, required in moving.

The complete model of individual migratory decision-making in the human capital framework³ is a model balancing the cost of migration against the net gains in

²Aid to Families with Dependent Children (AFDC) covers children under 18 who are poor "by reason of the death, continued absence from home or physical or mental incapacity of a parent" (42 USCA 601). General assistance programs, funded and administered by the States, vary widely both in eligibility requirements and funds made available. Neither program provides adequately for the healthy poor family headed by a father. Even though the 1961 amendments to the Social Security Act established a new category, Aid to Dependent Children—Unemployed Parent Program (ADC-U), for poor, healthy, intact families of unemployed persons, it has not filled the void, in part because aid is restricted to families that have established a regular and substantial attachment to the labor market during the past year.

³See the Appendix.

income, welfare opportunities, and improved local environmental conditions.

This model assumes that the potential migrant is operating under the following decision rule: The individual, choosing between a number of possible destinations, will move to the location providing him with the highest net real income, if that income is greater than it would be if he remained at home. The number of migrants from a home location to another location will depend on the distribution of real income in the new location. As benefits increase in this new location, or decrease at home, one should expect the level of migration to rise. Population sizes at both locations should have a similar effect. Perfect information has been assumed; that is, the potential migrant is aware of employment conditions, redistributional or welfare opportunity, and the costs associated with a move to various possible destinations. The conduit for this information is friends and relatives in the various labor markets. One must have information *and* a good job (welfare) opportunity, not information *or* a good job (welfare) opportunity.

A general model of migration was constructed, based on this theory as it relates to the individual. (See the appendix for formal presentation of the model, equations 1 to 4.) From the economic theory of migration, several normative conclusions can be derived. When migration is considered from the migrant's point of view, if his expectations are realized by the move, it may be assumed his lot has improved. If these improvements come in the form of increased income or job mobility, then migration is an efficient means for overcoming the effects of other immobility factors. On the other hand, if welfare programs are a major element in the migration decision, the individual in fact, pays an excessive price.⁴

A move has two potential effects on the national allocation of human resources, depending on the primary reason for migrating. If a person moves from a low-wage to a high-wage area, he improves his chances for higher earnings. This, in turn, has the effect of leveling wages nationally by reducing the regional variations in price resulting from differences in supply and demand. If, on the other hand, welfare opportunities dominate the decision to migrate, the result might be a flow into areas where job opportunities are scarce and/or wages low, but welfare benefits high. In such a case, migration would work against the goal of economic absorption of the unskilled migrant. This result would have profound policy implications.

⁴The added benefit the individual gains from the move could conceivably cost less if transferred to him at his home location rather than at his destination.

Testing the Migration Hypotheses

The three hypotheses represent three separate aspects of the general migration model. To test each aspect, a modified form of the general model is employed. (See the Appendix, equations 5 to 7.)

The "Push" Hypothesis. Niggardly welfare systems, particularly in the rural South, have forced many poor persons to leave. The model (equation 5) assumes that the rate of migration depends on the labor market and welfare opportunities in the home area and local conditions. These factors, together with the supply of potential migrants and the local population's level of information about other areas, constitute the major "push" forces causing people to migrate. Opportunity factors for other areas are held constant, for the purposes of this analysis.

The model was tested against the amount and net rate of black migration between South Carolina's counties. A similar analysis was conducted on the net rate of black migration from South Carolina's counties to other States. The data were drawn from the 1950 and 1960 censuses.⁵ It was necessary to employ a number of proxy variables in place of continuous variables to test the hypothesis because of the lack of the appropriate quantitative data.

Most of the variation in the net number of migrants between counties can be attributed, not surprisingly, to differences in the supply of potential migrants and labor market conditions. Individually, none of the coefficients differed significantly from zero. A similar analysis for other Southern States yielded similar results.⁶ It may thus be concluded that during the 1950-60 decade the variation in welfare opportunities from district to district within States was not a major determinant of the net number of black migrants. Job opportunities, labor market conditions, information, and patterns of racial discrimination are the major determinants of inter-county movement.

⁵Editor's Note: The inferences drawn from these data may have limited application today, as they reflect conditions in the 1950's.

⁶Similar analyses were conducted for Mississippi, North Carolina, and Alabama. All of these States have high rates of migration, large poor black populations, and generally meager welfare systems. Only the results for South Carolina are presented because they are based on the most reliable and detailed welfare data. None of the conclusions presented were contradicted by the results of the analyses of other States. Some of the results for Mississippi are contained in R. D. Reischauer, "The Impact of Redistributional Programs on Geographic Mobility," Labor Workshop 1969, Columbia University. (Mimeographed.)

A similar analysis of the black migration rate from South Carolina's counties to other States showed that this rate was strongly affected by labor market conditions. The variables for ambience (or discrimination) did not have a significant impact on the rate of migration. The proxies for the level of information did have a strong influence: rural living cut down information about opportunities elsewhere, and education increased such knowledge and hence stimulated net out-migration.

The "Pull" Hypothesis. Once the migrant has decided to leave, his choice of destination could be in part contingent upon its welfare opportunities. To test this hypothesis, the general model was modified to define migration from the 13 Southern States to the sample urban areas outside the South as a result of the interaction between the following variables: The relative labor market conditions; the relative welfare opportunities, and relative population differences, expressed as ratios, between two locations. Also included are the cost of migration and the level of information the potential migrant has about the urban destination. A number of proxies drawn from several sources are used to test the hypothesis, because of the absence of the appropriate quantitative data.

Two samples of urban areas absorbing the vast majority of black migrants from 13 Southern States were employed in the statistical analysis: (1) 19 urban areas for which labor market data were available over the entire 1955-60 period and (2) 20 other urban areas for which labor market data were available only for 1960.

Gravity factors (the population variables) and the migration costs as represented by the proxy (distance) explained over half of the variation in the number of black migrants between any Southern State and each major northern and western industrial area.⁷ The expected labor market conditions, measured by the wage rate for selected occupations in the urban destination area, had statistically significant effect on the decision to migrate, while those in the home location did not. Welfare benefits in the city of destination produced a similar reaction. In both cases, the effect was to favor the decision to migrate. The welfare opportunity variable (a composite—EXWEL 1—based on the rejection rate of welfare applicants and the benefit level) had a

significant influence on the volume of black migration, while the prevalence of welfare (a composite—EXWEL 2—based on the welfare caseload in relation to the poor population and the level of benefits) had little influence. The former measures the relative hospitality of the system; the latter, its generosity. Migrants tended to go to more hospitable areas. It was found that migrants tend to stay away from cities where ghetto apartments are expensive. The most important variable, however, was information; migrants tended to move to areas about which they had some knowledge, as measured by the model, rather than to less familiar areas. The information variable must be interpreted cautiously, since it is actually based on past migration from the home area to the city in question, which assumes that current migrants had friends and relatives living at the destination.

The analysis of the larger sample (20) of cities verified the conclusions based on the smaller sample (19). In all cases, however, welfare opportunities in the central city had considerably less drawing power than potential earnings in low-skilled jobs. The question remaining unanswered is how significant, in numerical terms, the push and pull of welfare have been for black migration.

Two experiments were performed to gain an insight into this question. Experiment 1 tested the effects of the generally meager southern welfare systems on the number of black migrants. This meant substituting the values EXWEL 1 = \$77.98 and EXWEL 2 = \$39.33 (the average value of these variables among the large cities in the sample in place of the actual values of these variables for each Southern State) and comparing the predicted with the observed level of black migration. Experiment 2 explored the potential effects on the volume of migration of instituting a uniform national welfare system. Two approaches have been proposed to bring about this goal: In experiment 2A, testing the first of these, benefits in every city and Southern State were set equal to the most beneficent level discovered.⁸ In experiment 2B, benefits in cities with above-average levels were left unchanged and below-average benefits in the Southern States and some cities were raised to the average of central cities in the sample areas.

Raising the welfare opportunities in the South to the average level of those in the urban centers in experiment 1 indicates that the actual migration would have been reduced by 7 to 21 percent. Experiment 2A, setting up a

⁷Baltimore, Boston, Chicago, Cleveland, Dayton, Denver, Detroit, Gary, Los Angeles, Milwaukee, Minneapolis, Newark, New York, Oakland, Philadelphia, Phoenix, St. Louis, San Diego, San Francisco, Seattle, Washington, D.C., make up the total list of industrial areas included in either the first, the second, or both samples, depending on the availability of the appropriate data.

⁸For EXWEL 1, welfare opportunities equivalent to those found in Milwaukee were used; for EXWEL 2, the data for Boston.

uniform welfare system equivalent to the most lenient, showed an increased rate of black migration out of the South, no matter what measure of welfare or income was used. Experiment 2B, raising all benefits to the national average, while permitting persons with benefits above the national average to continue unchanged, yielded ambiguous results.

From these experiments, two general conclusions were drawn. First, a more liberal welfare system in the South during the 1955-60 period would have had little effect on black migration to the central cities of the North and West regardless of the variable (welfare or income) one uses. Second, uniform benefits are not likely to significantly relieve central cities of the inflow of unskilled persons and may slightly increase the influx of poor persons.

The "Urban Sink" Hypothesis. Welfare opportunities may make the core cities into sinks providing no paths to economic advancement and little incentive for the poor to leave. This hypothesis was tested using equation 7. The assumption is that an area's gross rate of black out-migration is a function of its labor market conditions, welfare opportunities, ambience, and population characteristics and of the residents' level of information about opportunities elsewhere. Other factors were held constant. A number of proxy variables were used to test the hypothesis. The data were drawn from the 1950 and 1960 Censuses of Population and the 1958 Census of Manufactures.

The model performed as anticipated. Increased wages for blacks reduced the rate of out-migration, while higher unemployment exerted the opposite effect. Both measures of the level of information about opportunities elsewhere were important determinants of gross black outmigration from urban areas.

In sum, it is clear that welfare benefits, on the whole, have probably played only a minor role in determining the pattern of migration of the low-income black population. If this is so, there is little danger that personal or social resources have been wasted in this mobility.

Marital Stability Model and Welfare

Many critics of the current welfare system agree that existing welfare regulations foster family instability. They agree that those regulations, which exclude most

poor husband-and-wife families from Aid to Families with Dependent Children assistance grants, contribute to this problem. Thus they have argued that expanding the set of families eligible for family assistance plans or guaranteed income measures would result in a marked strengthening of the low-income family structure.

Since little is known about the causal relationship between welfare opportunities and the incidence of low-income marital instability, this study attempted to answer three questions: Has the welfare system significantly affected the family structure of the poor? What has been the mechanism for this influence? Are welfare reforms likely to stabilize low-income family life? An economic model of the family was developed to examine these questions. (See Appendix, Marital Stability Model.)

Toward an Economic Theory of Marital Stability

The central thesis is that the formation, maintenance, and dissolution of the family is, in large part, a function of the relative balance between the benefits and costs of marriage as seen by the individual members of the marriage. The major benefit generated by the creation of a family, by marriage, is the expansion of the set of consumption possibilities. The benefits from such a partnership depend largely on the relative dissimilarity of the resources or basic endowments each partner brings to the marriage. Persons with similar productive capacities have less economic "cement" holding their marriage together. Since the family performs certain functions society regards as vital, a complex network of social and legal buttresses has evolved to reinforce marriage. Much of the variation in marital stability across income classes can be explained by the variation in costs of dissolution imposed by society (e.g., division of community property, alimony, child support, social stigma of the divorce, etc.).

In summary, the model presented suggests that marital stability should be positively related to the costs of achieving an acceptable agreement on family consumption and production and to the prevailing social price of instability in the marriage partners' socioeconomic group. The complete model states that marital instability is a function of the economic benefits derived from the partnership, the costs of the partnership, and the institutional or social costs of breaking up. The model was tested against data on black families with children under 18, drawn from the 1960 Census of Population.

If all poor families could receive welfare, would the incidence of instability change markedly? The answer to this question depends on the relative importance of three categories⁹ of potential welfare recipients. The first is the "cheater"—the husband who is reported to have abandoned his family, but in fact disappears only when the social caseworker is in the neighborhood. The second consists of a loving husband and devoted father who, sensing his own inadequacy as a provider, leaves so that his wife and children may enjoy the relative benefit provided by public assistance. Finally, there is the unhappily married couple who may remain together out of a sense of economic responsibility for their children, because of the high costs of separation, or because of the slight consumption benefits of marriage.

If the first two types of special cases are numerous on the AFDC rolls, guaranteed income or family assistance programs should reduce observed marital instability significantly, since the advantage to cheating or leaving would be eliminated. On the other hand, if the third type is most numerous in the low-income population, liberalization of the welfare system would not have this effect; conceivably, it could increase disruption among low-income families. To the extent that welfare is a form of government-subsidized alimony payment, it reduces the institutional costs of separation, guarantees a minimal standard of living for wife and children, and hence may permit the dissolution of a marriage.

Marital Stability Findings

The economic model of marital stability does not appear to be a powerful tool for understanding the variation in the incidence of marital stability among black central-city residents.

Expected AFDC income, measured by EXWEL 1 and 2, exerts a significantly positive pressure on family instability. It would seem to indicate that AFDC regulations that favor female-headed families are not a significant cause of instability of low-income marriages. Rather, it is the general provision of welfare income—purchasing power that is independent of work of the individual or the spouse—that stimulates family disruption. The model suggests that welfare income, and perhaps all other unearned income, reduces the relative consumption benefits afforded by marriage.

⁹Editor's Note: A fourth category not treated here is the "never-married mother." In about 28 percent of AFDC families in 1971, the father of the children was neither married nor living with the mother. See *Findings of the 1971 AFDC Study, Part I, Demographic and Program Characteristics* (Washington: U.S. Department of Health, Education, and Welfare, 1971), p. 4.

Conclusions

As with most government programs, the welfare system changes social behavior by altering the relative prices of different courses of individual action. Much of the criticism of the existing system is based on unsubstantiated convictions that these distortions are both significant and perverse: work is discouraged, family stability undermined, nonproductive migration rewarded, and self-respect shattered.

The second and third of these possibilities were examined by developing a theoretical framework of empirical testing. The results of this analysis allow the following conclusions:

1. Net migration of blacks from the South prior to 1960 appeared to be unrelated to welfare opportunities in Southern States. Thus, minimal southern welfare was not a major force driving untrained rural blacks to overcrowded urban centers in the North and West.

2. The patterns of black migration from the South, while primarily a function of labor market conditions, were significantly influenced by the welfare opportunities in the cities of destination.

3. The availability of welfare had little if any effect on the rate at which low-income persons left central cities. If these urban cores are becoming sinks for the poor, the explanation must be found elsewhere.

4. Welfare opportunities were a significant determinant of family instability in poor neighborhoods, but this did not seem to be the result of the AFDC regulations that exclude most intact families from coverage. Rather, welfare-related instability arose because public assistance lowered both the benefits of marriage and the costs of its disruption by providing a system of government-subsidized alimony payments.

These conclusions may have some relevance for planning public welfare policy where this policy is related to migration and concerns about family stability.

It is, of course, possible that the structures of the relationships would change significantly with the major shift in the independent variables implied by welfare reform. It is also conceivable that the responses of individuals to such economic stimuli have altered considerably since the data were collected.¹⁰ Furthermore,

¹⁰Significant changes have occurred in the welfare system since 1960. Benefit levels have risen, caseloads have almost tripled, and the number of persons classified as poor has been nearly halved. Welfare rights organizations and antipoverty lawyers have begun defending the rights of welfare recipients, and the courts have abolished many of the capricious administrative practices of welfare agencies.

questions may be raised about the adequacy of the theoretical models or the data used to test the various hypotheses. It is hoped, however, that in refuting or

substantiating the conclusions of this essay, others will generate alternative theoretical models capable of being tested empirically.

Appendix — Equations for Models

General Migration Model

Equation 1

$$PV_j = \sum_{n=1}^m \frac{Y_{jn} - Y_{in} - g(C_n)_{i \rightarrow j}}{(1 + a)^{n-1}}$$

The present values (PV) associated with each potential destination (j) are compared and the location with the maximum value selected (where [Y] refers to the real income, [g(C)] to the cost generated in each year [n], [i] is the subscript designating the current location while [a] is the subjective discount or time preference rate).

Equation 2

$$PV_j = \sum_{n=1}^m \frac{Y_{jn} - Y_{in} - g(C_n)_{i \rightarrow j} + B(W_j - W_i)_n + (A_j - A_n)}{(1 + a)^{n-1}}$$

The decision rule is: the individual migrates to the (j) providing the maximum (PV_j) if it is greater than 0, the value of remaining in (i). It is clear that the number of migrants from (i) to (j) will depend upon the distribution of individual (PV_j)'s. Factors raising the average (PV_j) will increase the observed level of migration. Thus, when expected income or level of redistributive (or welfare) benefits rises in (j) or falls in (i), migration from (i) to (j) should increase. The size of the populations of (i) and (j), representing the density of the distribution of (PV_j)'s, should have a positive impact on the number of migrants. Perfect information has been implicitly assumed.

Equation 3

$M_{i \rightarrow j} = f(Y_j, Y_i, W_j, W_i, A_j, A_i, I_{ij}, C_{i \rightarrow j}, a, P_i, P_j)$ where ($M_{i \rightarrow j}$) is the number of migrants from (i) to (j), (Y) refers to average real incomes, (W) the redistributive opportunities, (A) the local ambience, (I_{ij}) the network of information (relatives and friends in (j)), (a) an average discount rate for the pool of potential migrants, and (P_i and P_j) the size of the population in the origin and destination. The expected effects are: $\frac{\partial M}{\partial P_i}, \frac{\partial M}{\partial P_j}, \frac{\partial M}{\partial Y_j}, \frac{\partial M}{\partial W_j}, \frac{\partial M}{\partial A_j}, \frac{\partial M}{\partial I} \geq 0 \geq \frac{\partial M}{\partial C}, \frac{\partial M}{\partial Y_i}, \frac{\partial M}{\partial W_i}, \frac{\partial M}{\partial a}$.

Equation 4

Adding these control factors to the model specified previously, we have: $M_{i \rightarrow j} = f(Y_j, Y_i, W_j, W_i, A_j, A_i, I_{ij}, C_{i \rightarrow j}, Age_i, Educ_i, a, P_i, P_j)$.

Equation 5

Model for Testing "Push" Hypothesis

Adapting the general model to the specific problem results in:

$$M_i = g(Y_i, W_i, A_i, R_i, G_i, b)$$

where R is the level of information which the local population has about conditions in another area, G is the age profile or supply of potential migrants, and b is a constant term.

Equation 6

Model for Testing "Pull" Hypothesis

The general model has been rewritten as follows:

$$M_{i \rightarrow j} = f(Y_i, Y_j, W_i, W_j, P_i, P_j, C_{i \rightarrow j}, I_{ij},)$$

Equation 7

Model for Testing "Urban Sink" Hypothesis

$$M = p(L_i, W_i, A_i, P_i, I, b)$$

The condition in the rest of the Nation can be subsumed in the constant term (b). The model relates the gross rate of black out-migration (M) from a number of metropolitan areas (i) to a series of variables representing labor market conditions (L), redistributional (welfare) opportunities (W), ambience (A), and population characteristics (P) in the city concerned, plus some measure of the information local residents have about opportunities elsewhere (I).

Marital Stability Model

The major benefit generated by the creation of a family, by marriage, is the expansion of the set of consumption possibilities. Using the theory developed by Gary Becker,¹¹ let us assume that the satisfaction of

an individual (U_{wife} or U_{husband}) depends upon the consumption of a set of commodities ($U = g(Z_1, Z_2, \dots, Z_k)$) that the individual produces by combining time (t_i) and market goods ($X_a, X_b \dots$), that is ($Z_1 = f(t_i; X_a, X_b \dots)$). The individual's level of satisfaction is limited by his inability to purchase more market inputs than his earned ($t_L W$) and unearned (V) income permit ($\Sigma P_a X_a \leq t_L W + V$, where P_a is the market price of X_a) and by the fact that only a finite amount of time is available for labor and the production of commodities ($T \geq t_L + \Sigma t_i$).

If the productivities of the prospective marriage partners differ either in the production of basic commodities or in the market place (e.g., $W_H \neq W_w$ or $\frac{\partial Z_h}{\partial t_H} \neq \frac{\partial Z_w}{\partial t_w}$), a new division of labor within the family will permit each partner to increase his individual level of consumption.¹² As in a simple trade model, if the husband is relatively more efficient in the market place, the wife's time will be substituted for his time in production of basic commodities and the reverse will be true in the market place. More or less complete specialization will occur if for all input combinations of all commodities $\frac{\partial Z_i / \partial t_h}{W_h} < \frac{\partial Z_i / \partial t_w}{W_w}$. In effect, the wife will trade commodities (Z_i) for market inputs (X_a). While a couple may not be able to live as cheaply as one, they can produce and hence consume more than two separate individuals.

¹¹Gary Becker, "A Theory of the Allocation of Time," *Economic Journal*, September 1965, pp. 493-517.

¹²In fact, only the relative productivities (i.e., $\frac{\partial Z_i / \partial t_h}{W_h} \neq \frac{\partial Z_i / \partial t_w}{W_w}$) need differ.

INCOME AND OCCUPATIONAL DIFFERENCES BETWEEN WHITES AND BLACKS

Although the median income of black urban men has been consistently lower than that of white men, a large part of the income difference results from differences in productive capacity.¹ Blacks have fewer years of education, and lower scholastic achievement and are over-represented in the low-income South. On the basis of census data adjusted for these and other, minor factors, the income of black men in urban areas is estimated at between 81 and 87 percent of white men in 1959.

For women, on the other hand, it is found that allowing for geographic and educational differences more than compensates for the income difference, with the adjusted income of blacks ranging from 108 to 125 percent that of whites.

After similar adjustments, the relative income of black urban men is shown to have increased significantly during the 1940's but to have changed little during the 1950's and early 1960's when allowance is made for the migration of blacks from the South to the higher income North. For women, the income of blacks is found to have increased relative to that of whites throughout these years, with the largest increase coming after 1959.

Estimated income and employment differentials for various occupations show discrimination against black men to be strongest among salesmen, managers, officials, and such craftsmen as electricians, typesetters, and plumbers. In clerical occupations, employment discrimination is judged to be low for black men, primarily because they are concentrated in such Government occupations as postal clerk and mail carrier. But for black women, employment discrimination is indicated to be rather high in clerical work, even though they had more than three times as large a share of the clerical jobs held by women in government as in private industry. On balance, however discrimination in most occupations is found to be less prevalent in government than in the private sector.

Introduction

The influence of racial discrimination in employment has been a subject of discussion in the United States for decades and a matter of intense political and legislative activity during the 1960's and subsequently.

This dissertation explores color discrimination by examining the relative incomes and job opportunities of whites and blacks. It develops its findings through three principal approaches. Estimates are derived of income differentials between whites and blacks of similar productivity capacity. Changes in income differentials between 1939 and 1966 are reviewed. Finally, variation in the intensity of discrimination among occupations and industry sectors is studied.

These items are patently interrelated, and efficient use of manpower and formulation of current economic and social policy require more complete knowledge of the extent and incidence of racial discrimination.

¹ Statistics for nonwhites are used in this abstract to indicate the situation for black workers. Nationally, blacks constitute about 92 percent of the larger group.

Income and Productivity Differences, 1959

Differences in income between whites and blacks are not solely the result of discrimination. It has been well documented that the two groups differ in productivity; basic economics, then, dictates that their incomes will differ. Hence, the first step in measuring the discrimination-related differential is to correct the ratio of black to white incomes for variation in productivity factors.

The income differential may be disaggregated by constructing indexes of distributional and income differences.² The distributional index measures income differences that result from differences in the distribution of whites and blacks with respect to productivity factors. Consequently, the index of income differences measures differences in income *after* productivity factors are considered.

Adjusted Income Ratios for Urban Men, 1959

Using primarily 1960 census data, the author calculated indexes to adjust the black/white income ratio for each of five factors which affect the income of urban

² The mathematical form of the index of income differences is:

$$\frac{\Sigma(Y_n \cdot D_w)}{\Sigma(Y_w \cdot D_w)} \text{ (Laspeyres) and } \frac{\Sigma(Y_n \cdot D_n)}{\Sigma(Y_w \cdot D_n)} \text{ (Paasche),}$$

where n and w are subscripts denoting black and white population groupings, Y is the median income of those with income within a productivity category (e.g., age, education, or region), and D is the percent of population with income within the productivity category.

The form of the index of distribution differences is:

$$\frac{\Sigma(Y_n \cdot D_n)}{\Sigma(Y_n \cdot D_w)} \text{ (Laspeyres) and } \frac{\Sigma(Y_w \cdot D_n)}{\Sigma(Y_w \cdot D_w)} \text{ (Paasche).}$$

Since the distributional categories are in percentages, the estimates for those with income are not affected by differences in the size or participation rates of the two labor forces. One could construct an index of distribution differences, assuming both color groupings had the median income of the total population within productivity categories. Because whites compose a large percentage of the total population, such an index would closely approximate the Paasche index.

The Laspeyres index of income differences is the hypothetical ratio of the median income of black to white men, assuming both color groups were distributed among productivity categories as whites actually were. The Paasche index of income differences is a similar hypothetical ratio under the assumption that both color groups had the productivity distribution of blacks. The index of income differences is essentially an estimate of the ratio of black to white income after adjustment for differences in the productivity factors considered.

men: (1) The quantity of education, because white men in urban areas have, on the average, a higher educational level than blacks and could be expected to receive larger incomes; (2) scholastic achievement, which takes into consideration the differences in outlay of funds per pupil, number of days in school, quality of schooling, and environmental factors;³ (3) State distribution of residence, important because blacks are overrepresented in the South, where wage rates typically are lower than elsewhere and color differentials in income are greater; (4) black overrepresentation in large cities, because the incomes of blacks would be greater than if they were distributed among cities of different sizes in the same manner as whites; and (5) age distribution, important because white men are overrepresented in older age categories and blacks in the younger and prime earning age categories.

The "added effect" column in table 1 gives the contribution of each factor to the difference between published unadjusted incomes for black and white men, as calculated from the indexes. Applying the sum of the marginal factors to the unadjusted black/white ratio raised it from 58 percent to between 81 and 87 percent. In other words, black men's income, instead of being three-fifths of white income, would have been somewhat more than four-fifths of white income if the distribution of blacks and whites had been the same with respect to the five factors listed above. The remaining income differential—between 13 and 19 percent, depending on the method of calculation—is a measure of the extent of discrimination against black men in urban areas.

Adjusted Income Ratios for Urban Women, 1959

It has become more and more commonplace for urban families to have two wage earners. The labor force participation rate is higher for black than white women, and the earnings of women are an especially important source of family income for blacks.

Table 2 summarizes the estimated importance of various factors in explaining the income differential between white and black urban women.

After standardization for the five productivity factors, the income of black urban women was estimated to be between 108 and 125 percent of the income of white

³ See footnote 2, table 1 for further explanation.

TABLE 1. ADJUSTMENT OF INCOME RATIO OF BLACKS TO WHITES, 1959: URBAN MEN

Adjustment factor	Index of income differences ¹		Added effect of adjustment factor	
	Laspeyres	Paasche	Laspeyres	Paasche
Unadjusted black/white income ratio	58.3	58.3	--	--
Quantity of education	67.0	69.9	8.7	11.6
Scholastic achievement ²	85.1	82.1	18.1	12.2
State distribution	91.0	84.5	5.9	2.4
City size	89.3	83.3	-1.7	-1.2
Age distribution	86.5	80.9	-2.8	-2.4

¹ The indexes include the cumulative effect of adjustments, made in the order in which the adjustment factors are listed. The formulas for calculating the indexes are given in text footnote 1.

² Since both maximum and minimum scholastic achievement differentials were estimated by James S. Coleman and others in *Equality of Educational Opportunity* (Washington: U.S. Department of Health, Education, and Welfare, Office of Education,

1966), minimum and maximum adjustments were calculated for the scholastic achievement factor. The estimates shown bracket the other two estimates; the marginal effect of this factor would be 13.7 (Laspeyres) and 15.7 (Paasche) if the alternative estimates were used. Therefore, the figures shown are the maximum and minimum estimates of the black/white income ratio.

TABLE 2. ADJUSTMENT OF INCOME RATIO OF BLACKS TO WHITES, 1959: URBAN WOMEN

Adjustment factor	Index of income differences ¹		Added effect of adjustment factor	
	Laspeyres	Paasche	Laspeyres	Paasche
Unadjusted black/white income ratio	65.9	65.9	--	--
Quantity of education	81.9	81.7	16.0	15.8
Scholastic achievement ²	124.9	108.5	43.0	26.8
State distribution	137.7	118.4	12.8	9.9
City size	134.7	115.8	-3.0	-2.6
Age distribution	125.3	108.0	-9.4	-7.8

¹ See footnote 1, table 1.

² See footnote 2, table 1.

women. The estimates indicate that productivity factors more than accounted for the actual white/black income differential for women.

Despite their greater education and higher scholastic achievement, white women's *actual* median income was only 2 to 5 percent higher than that of black women in the North in 1959. Unlike the situation of men, the evidence indicates that the money income of black urban women was as great as, or greater than, that of whites of similar productivity in the North, and probably in the United States as a whole.

There are several possible explanations for this observation. First, the average time worked during the year (both weeks and weekly hours) was 3 percent greater for black than white women. Second, black women were more likely to be primary workers, while many white women were the second earner in the family. The data are also consistent with the hypothesis

that the intensity of discrimination against women differed little between whites and blacks. Therefore, racial discrimination may have added little to the effects of existing sex discrimination.

At least two possible hypotheses may explain why the adjustment for productivity more than accounted for the observed income differential for women, whereas a differential persisted for men. First, there may be more discrimination against black men than against black women. The different occupational structures for men and women give some indication why this could be the case, and institutional considerations—for example, the effect of unionization in cutting competition—may also contribute. Second, matriarchy is more common in black families, and associated cultural and environmental factors might contribute to higher job performance and educational achievement for black women vis-a-vis black men.

Changes in Income Differentials, 1939-66

To identify and measure some of the forces causing income changes over the period 1939-66, the study analyzed: (1) Changes in the income levels of similarly educated whites and blacks, (2) shifts in the educational and age composition of the two populations, and (3) migration affecting the regional composition of the population.

Again, the approach measured the distributional effect⁴—that is, that part of the increase in the group's income which could be attributed to changes in its average educational level and age composition. With age and education thus held constant, the remainder of the rise in income was designated the "income effect."⁵ When both the income effect and the distributional effect were considered, the results gave an estimate of both the level and source of income changes over time.

Changes in the Income Ratio Since 1939

Prior research indicated that the mean income of black men relative to white men in urban areas increased by 9.5 percent in the North and West and 16.3 percent in the South between 1939 and 1959. This study, however, found that changes in the education-age distributions reduced the ratios by between 5.3 and 10.3

⁴ The form of the distributional effect is:

$$(2) \frac{\Sigma(Y_2^e \cdot E_2)}{\Sigma(Y_2^e \cdot E_1)} - 1 \text{ (Laspeyres) and}$$

$$(2') \frac{\Sigma(Y_1^e \cdot E_2)}{\Sigma(Y_1^e \cdot E_1)} - 1 \text{ (Paasche)}$$

⁵ The mathematical form used to estimate the income effect is:

$$(1) \frac{\Sigma(Y_2^e \cdot E_1)}{\Sigma(Y_1^e \cdot E_1)} - 1 \text{ (Laspeyres) and}$$

$$(1') \frac{\Sigma(Y_2^e \cdot E_2)}{\Sigma(Y_1^e \cdot E_2)} - 1 \text{ (Paasche),}$$

where Y^e is the income within an education-age cell of those 25 years old and over, E is the percentage of a population with income with the quantity of education specified by the education-age cell, and subscripts 1 and 2 indicate time periods.

TABLE 3. ADJUSTMENTS OF CHANGES IN MEAN INCOME RATIO OF BLACKS TO WHITES FOR URBAN MEN, BY REGION, 1939-59

Adjustment factor	Percent change in ratio		
	North and West	South	United States
Total	+9.5	+16.3	+14.4
Income effect: ¹			
Laspeyres	15.6	21.2	--
Paasche	22.0	26.3	--
Distributional effect: ²			
Laspeyres	-5.3	-4.1	--
Paasche	-10.3	-7.9	--
Regional composition:			
Laspeyres	--	--	2.1
Paasche	--	--	2.8

¹ See text footnote 4.

² See text footnote 3.

percent in the North and West and 4.1 and 7.9 percent in the South during this period. Apparently, as blacks increased their education, they moved up into job levels where income differentials were larger. Thus, larger increases in income for blacks than for whites of the same age and education more than offset the distributional effect, resulting in the observed net rise in the regional ratios.

For the country as a whole, the effect on income of changes in the regional composition of the black urban population was, as expected, positive (and on the order of 2 to 3 percent), reflecting net migration of blacks from the South to the higher wage North and West. After adjustment for these changes, the mean income of black urban men was estimated to have risen by 11 to 13 percent relative to whites between 1939 and 1959. (See table 3.)

Considerable attention centered on income differentials during the period 1949-59. Alan Batchelder found that the ratio of black to white median income for men 14 years old and over actually declined slightly in that period.⁶

⁶ Alan Batchelder, "Decline in the Relative Income of Negro Men," *Quarterly Journal of Economics*, November 1964. The discussion of the period 1939-59 above used the ratio of the mean incomes of blacks and whites, whereas Batchelder used median incomes for the same ratios. In keeping with this approach, median income was also used in this analysis. The fact that the median data were not standardized for changes in urban/rural and age composition of the population is another source of noncomparability with data in the preceding section.

Data for the 24 largest standard metropolitan statistical areas (SMSA's) were found to be consistent with Batchelder's findings. The ratio of the median income of black to that of white men increased during the 10 years in only four of the 24 SMSA's. Similarly, with education held constant, the data showed a negative income effect for both the South and the United States as a whole. This implies a greater increase in income for whites than for blacks of the same education.

The effects of men's rising education were insignificant in the South and slightly negative in the North. However, in the United States as a whole, the ratio rose by 4.3 to 4.8 percent. (See table 4.) This anomaly occurred because blacks who left the South had more education than those who stayed, but less than those already residing in the North. Hence, migration reduced the median education in both regions despite the overall rise in blacks' educational level.

For black women, both the income effect and the distributional effect were positive; not only the generally rising trend in income, but also the increased income associated with rising educational levels, benefited black more than white women. So did migration to the North and West. Overall, the black/white median income ratio for women rose 11.2 percent for the South and 19.0 percent for the United States as a whole between 1949 and 1959. Other data suggest that this increase was due not so much to a rapid improvement in the incomes of black women as to a worsening in the relative position of white women.

During the first half of the 1960's, the relative income gains of black men and women accelerated.

Between 1959 and 1966, the black/white ratio for median income rose 7 percent for men and nearly 21 percent for women. After adjustment for migration, the gain in the ratio for men was small—estimated at between 1 and 2 percent—whereas the adjusted differential for women was 13 to 15 percent. The income of black women increased faster than that of the other three color-sex groupings during the period, but the income of white women continued to increase more slowly than that of other groups.

Implications of the Income Ratios

Combining the results of the foregoing sets of data leads to the conclusion that, after adjustment for changes in the regional distribution of the population, the relative income of black men increased significantly during the 1940's (probably 10 percent or more) but failed to increase during the 1950's and then rose only slightly to 1966. There are several explanations for the small increase within regions after 1949. As indicated previously, migration lowers the educational level and hence the average income of black men in both the North and the South and thus offsets part of the rise in the black/white income ratio for men at the same educational levels. For a black man, the more his education, the smaller his expected income in relation to a white with similar education; the black/white income gap widens, both absolutely and relatively, as the

TABLE 4. ADJUSTMENT OF CHANGES IN MEDIAN INCOME RATIO OF BLACKS TO WHITES FOR MEN AND WOMEN, BY REGION, 1949-59¹

Adjustment factor	Percent change in ratio				
	North and West, men	South		United States	
		Men	Women	Men	Women
Total	0.2	-5.2	11.2	3.4	19.0
Income effect:					
Laspeyres	2.7	-4.9	4.8	-1.3	7.9
Paasche	1.8	-5.9	5.0	-.9	8.6
Distributional effect:					
Laspeyres	-2.4	-.2	6.2	4.8	10.2
Paasche	-1.6	.7	6.0	4.3	9.5
Regional composition:					
Laspeyres	--	--	--	5.5	8.4
Paasche	--	--	--	6.5	7.5

¹ The approach used for the mean data in table 3 was applied to median data, except as noted in text footnote 6.

educational requirements of the job increase. Furthermore, the higher the educational level, the greater the scholastic differential, so that the black/white gap in achievement widens as the general educational level of the two populations rises. In addition, there is some evidence that employment opportunities for black men are less favorable in occupations requiring higher skills and greater education, and employment opportunities have been declining in jobs where discrimination is low and expanding in those where discrimination has been strongest. Therefore, both the educational gap and the pattern of discrimination have adversely affected the ability of black men to increase their income relative to whites.

Black women, on the other hand, have been able to maintain and improve their relative income, perhaps suggesting a decline in the intensity of discrimination against them. Rising education does not widen the black/white income differential for women as it does for men, and black women are moving with increasing ease into better paying service jobs such as nursing. Furthermore, white women are more likely to be secondary workers and thus may have placed more emphasis on nonpecuniary working conditions as white family incomes have increased, whereas black women—at least those who are primary earners—may have emphasized money income rather than nonpecuniary benefits.

Relative Discrimination in Occupations and Industries

Both the theory of discrimination and existing institutional arrangements suggest that the intensity of discrimination varies among occupations. Unless employers discriminate against blacks in specific occupations, the occupational distribution of whites and blacks would not differ in a competitive model. And consumer and employee discrimination may reinforce employer discrimination in certain kinds of occupations. Consumer discrimination could be expected to be more intense in occupations with considerable employee-consumer contact and perhaps in such professions as lawyer and doctor. Even if there is no prejudice, the economic interests of some employee groups, particularly highly unionized groups having control of occupational entry, may induce discriminatory policies to protect the group from competition with workers willing to accept employment at a lower wage.

Occupational Discrimination

The 1960 census data were used to derive a hypothetical expected occupational distribution of blacks, based on the assumption that blacks of given educational and regional attributes were distributed among occupations in the same way as whites with similar characteristics. Since smaller proportions of blacks were found at the higher educational levels and outside the South, however, it was expected that the percentage of blacks would be less than the actual white percentage in the higher occupational classes and more in the lower occupational classes. It was also expected that the black/white income ratio for workers in an occupational class would be high when discrimination was comparatively low and vice versa, except in occupations where discrimination is manifested chiefly through the control of job entry.

When the actual white and the expected black employment distributions were compared, the poorest representation of blacks (both men and women) was found for sales personnel and managers, officials, and proprietors (see table 5). The black/white income ratio was also smaller for men in these two occupational groups than in other nonfarm occupations. For men, the shortfall of actual versus expected employment appeared to decrease with occupational classification. The exceptions were clerical and kindred workers and, to a lesser degree, professional and technical workers. Although clerical occupations were low in discrimination for men, the opposite was true for women. Black women were also underrepresented in the operatives group. In all major occupation groups, underrepresentation of blacks tended to be greater and income ratios smaller in the South than elsewhere.

The intensity of discrimination differed among occupations within the major groups. Both the income and employment differentials were small for black professional women, most of whom were either teachers or nurses. Very few women of either color were in such professional occupations as lawyer, engineer, or college faculty member, where discrimination against black men was also high. The overrepresentation of black men in the clerical group was traced to their concentration in five occupations—postal clerk, shipping and receiving clerk, mail carrier, stock clerk and desk and store keeper, and public administration clerk. These were also the only clerical occupations in which black women came close to matching their expected share of employment. But even in the clerical occupations where few black women were employed, their median income was usually

TABLE 5. ACTUAL AND EXPECTED BLACK/WHITE EMPLOYMENT RATIOS AND INCOME RATIOS FOR MAJOR OCCUPATIONAL GROUPS IN THE UNITED STATES, 1959, BY SEX

Sex and occupational group	Percent of labor force in occupation			Actual black as a percent of expected	Black median income as a percent of white	Black mean income as a percent of white
	White, actual	Black				
		Actual	Expected			
MALE						
Professional and technical workers.	11.6	4.3	5.4	77.6	68.4	62.1
Farmers and managers.	6.2	5.0	7.6	64.6	36.3	43.4
Managers, officials, and proprietors.	13.1	2.7	9.6	27.5	57.1	50.9
Clerical workers.	6.9	5.2	5.1	104.1	84.0	78.5
Sales workers.	7.1	1.4	5.1	26.6	55.6	58.3
Craftsmen and foremen.	22.9	12.0	23.3	50.7	65.7	66.2
Operatives.	19.9	26.1	23.9	107.4	70.1	70.3
Service workers.	5.3	15.0	8.0	187.5	¹ 75.5	68.3
Farm laborers.	1.1	6.3	3.7	168.5	57.5	57.4
Laborers.	5.3	22.0	8.4	258.8	80.8	71.9
FEMALE						
Professional and technical workers.	14.7	7.8	9.3	82.0	96.7	--
Farmers and managers. ....	.8	.7	1.0	68.2	67.2	--
Managers, officials and proprietors.	4.9	1.4	4.3	31.6	56.2	--
Clerical workers.	30.7	8.0	22.2	35.5	99.2	--
Sales workers.	9.4	1.9	8.8	21.8	98.3	--
Craftsmen and foremen.	1.5	.8	1.7	45.9	82.4	--
Operatives.	19.1	14.9	27.4	53.8	79.1	--
Service workers.	17.4	50.4	23.1	218.2	¹ 95.4	--
Farm laborers.	1.0	3.0	1.5	206.0	91.8	--
Laborers. ....	.5	1.1	.7	156.5	83.2	--

¹ Income data for both whites and blacks in service exclude private household service. Mean income data are unavailable for

women according to occupation and color.

at least 90 percent of that for all women in the occupation,⁷ indicating that job opportunity is the operative mechanism for discrimination in these occupations. Among the craft occupations, less than one-third the expected number of black men were found in such occupations as electrician, typesetter, printing pressman, machinist, plumber, and sheet metal worker. This underrepresentation is especially important, since nearly one-fourth of the black men were expected to be in craft occupations.

Employment Discrimination in Government

Table 6 indicates that the proportion of black men employed by government in 1959 exceeded that of

whites by nearly 21 percent. Furthermore, in the major occupation groups, the percentage of black men employed by government was from 55 percent to 400 percent greater than for whites except in service and laborer jobs. Only in service jobs (such as fireman and policeman) were significantly smaller proportions of black than white men employed in government. As a result, black men constituted a larger percentage of male employees in government jobs than in private industry in all but these two occupation groups.

Similar results were found for women. Indeed, black women composed nearly twice as large a percentage of the government as of the private female labor force for every major occupational group except service workers and laborers. For black female clerical workers, the public/private ratio was more than 3 to 1.

Thus, not only were relatively more blacks than whites employed in government jobs, but the blacks'

⁷ Income data for whites were not available for specific occupations.

TABLE 6. PERCENT OF BLACK AND WHITE MEN EMPLOYED BY GOVERNMENT, BY OCCUPATIONAL GROUP, 1959

Occupational group	Percent of occupational group employed by government		
	Blacks	Whites	Blacks/whites ¹
All occupations . .	12.8	10.6	120.8
Professional and technical workers	47.0	26.2	179.4
Managers, officials, and proprietors	8.8	3.3	266.7
Clerical workers	47.6	24.6	193.5
Sales workers	1.5	0.3	500.0
Craftsmen and foremen .	11.8	7.6	155.3
Operatives	7.2	4.2	171.4
Service workers	20.9	34.2	61.1
Laborers	11.6	11.6	100.0

¹ Proportion of blacks in occupational group employed by government as a percent of proportion of whites in group so employed.

share of total government employment in most occupations was higher than it was in private industry. Further, except for the special case of teachers—influenced by the large number of racially segregated schools in the South at the time the data were collected—the overrepresentation of blacks in government-dominated occupations was greater in the North than in the South. All of this suggests that discrimination is less intense in government than in the private sector.

An expansion of a low discrimination sector, by itself, would raise the black/white income ratio. However, government employment is highly human capital intensive; the government hires relatively more highly skilled, educated personnel than the private sector. The structure of government employment is therefore unfavorable to blacks, since hiring is heaviest at those skill levels where the supply of blacks is small. Thus, even though government is a relatively low discrimination sector, expansion is unlikely to improve the income of blacks significantly unless government functions change to require more low-skilled labor or unless government jobs are redesigned to use less skilled labor with no loss of efficiency.

Suggestions for Future Research

This study's estimated ratios of relative income and employment for different occupations and sectors can only suggest why discrimination is stronger in some fields than in others. Additional work is required to develop a complete theory of discrimination which indicates the reasons for differences in the intensity of discrimination among occupations and industries.

Black/white income differences were shown to vary widely according to location, even after adjustment for quantity of education. These variations may result from differences in occupational and industrial structure, institutional factors, and/or size of the government sector in the employment market. A study of the factors explaining the variation of relative income between locations might yield insight into factors other than prejudice that influence black/white income differences and the intensity of effective discrimination.

The development of more precise estimates of differences in the intensity of discrimination among occupations and sectors, by refining the data and tests of this study, also offers a promising direction for future research. In addition, the hypothesis that occupational differences in the intensity of discrimination contribute to differences between men and women in the black/white income ratio and to the larger relative gains of black women in recent years requires further study. Questions for investigation include: (1) Is there less discrimination against black women than black men? (2) Is the impact of color discrimination small for women, after the influence of sex discrimination is considered? (3) Is money income a suitable measure of employment discrimination for black women? (4) Do black women possess remunerative productivity characteristics to a greater degree than either white women or black men?

Finally, although this study presented evidence that government was a low discriminator relative to the private sector, possible differences in employment policies at different levels of government were not analyzed. Very little attention has been given to possible regional differences in the intensity of government discrimination. Both of these questions merit investigation.

MALE-FEMALE WAGE DIFFERENTIALS IN URBAN LABOR MARKETS

A major conclusion of this dissertation is that, with differences in personal characteristics largely eliminated, sex discrimination accounted for approximately three-fourths of the wage differential between white men and women and nine-tenths of that between blacks in 1967. When such differences in employment characteristics as the extent of union membership and industrial and occupational distribution were also taken into account, slightly more than half the wage differentials remained—51 percent for blacks and 54 percent for whites. It is contended, however, that the latter estimates are too conservative, since the calculations, in effect, eliminate important sources of employment discrimination against women.

One important implication of the study is that the male-female differentials are significantly larger than they might be expected to be if there were no discrimination. That is, economic theory would dictate that there would still be a male-female differential, but those observed in this study clearly show discrimination. Even equal pay laws may not do away with wage inequalities in any large-scale manner, since the legislation requires equal pay for equal work only in the same place of employment.

Data from the 1967 Survey of Economic Opportunity were used for a cross-sectional analysis of a number of urban labor markets to form the basis for the study.

Introduction

Pay differentials between men and women have long existed, but only recently have they been viewed as a serious social and economic problem. The disparity between male and female earnings is highlighted by the upward trend in female participation in the labor force beginning with World War II: Women made up 25 percent of the labor force in 1940 and 37 percent by 1968.

Earnings differentials between the sexes are an especially acute problem for families headed by women. In 1969, the median income of such families was

\$4,000, compared with \$11,000 for families headed by men; and in the same year, 47 percent of poor families were headed by women, compared with 28 percent in 1959.

In spite of the large gains made through legislation, including the Federal Equal Pay Act of 1963 and the Civil Rights Act of 1964, the average earnings of women are still only a fraction of men's average earnings. In 1955, the earnings of full-time women workers were 63.9 percent of men; by 1969, this figure had fallen to 60.5 percent. In 1967, relative earnings reached a low of 57.8 percent, stemming from adverse changes in the occupational distribution of women which accompanied their increased rate of labor force participation. None-

theless, the lack of improvement in the relative earnings of women over a period of 15 years points to the continued existence of a severe problem.

Theoretical Background of the Study

The problem of determining the causes of male-female wage differentials is best approached by assuming mathematical relationships between the wage rates for the different age-sex groups and a number of factors suspected of having influence upon the wage rates.

Two different sets of wage equations, called the "personal characteristics" equations and the "full-scale" equations, were derived in this study. The former describes the wage rate in terms of the characteristics of the subjects in the sample, such as health, marital status, migration from one part of the country to another, number of years of schooling, and number of years of work experience. This technique enables one to examine the amount of the difference in wages between sexes that is due to personal characteristics. In the full-scale equations, certain aspects of the work performed, such as union membership, occupational class, and the industry of employment are also accounted for; such standardization of nonpersonal characteristics of the worker allows the estimation of wage differences that would exist even in the absence of discrimination. It can rightfully be assumed that if this difference is smaller than that actually observed, overt discrimination in the wage rates of men and women does exist and can be quantified.

Wage differentials, whether they arise from differences in the value of the work that different individuals do or from discrimination against one worker who is contributing work of the same value as another, can best be understood in the context of human capital formation.

Human capital formation refers to the process of "investing in people." That is, training or education makes a worker more valuable if it enables him to contribute more to production than he could have prior to training. When viewed from the standpoint of a productive process, the worker is somewhat like a machine—the faster, more efficient, more innovative, or more stable he becomes, the more he is worth to the owner of the productive process.

By identifying the factors in human capital formation and quantifying them, hourly wage rates can mathematically be related to a number of such factors which are observable in the real world.

If one views labor as being paid according to ability and contribution to production, human capital formation implies that an individual has considerable discretion in determining his earnings; in the absence of outside factors, such as an oversupply of equally prepared workers or discrimination, it is obvious that the more training or education that an individual chooses to undertake, the better paying a job he can expect to obtain.

Machines have different values depending upon their anticipated operating lives, no matter how efficient they are at the outset; and evaluation of human capital must consider not only the training but also the expected worklife of the individual. The time factor is important both in determining wage rates due to the value as determined by production and in determining the amount of investment in training or education the individual undertakes in the first place.

It is generally assumed that the time during which training for work will pay off is shorter for women than for men, mainly because a woman's household and family activities will draw her out of the labor force, often for extended periods of her life, thus shortening the time during which she can realize a payoff to her human capital investment in training. It has been suggested that a person will see the amount of education or training he should undertake as determined by the added return he expects through the remainder of his worklife. Hence, even if men and women could obtain funds to finance training on the same terms and undertake training with equal ease, men would tend to invest more—undertake more training—and expect a higher wage rate than women, because of the observed (or imagined) tendency of women to spend less time in the labor force.

Differences in wage rates that arise from these considerations are *not* discriminatory; they arise from differences in the preparation of workers and their expected time of service. If these differences are recognized and controlled, the remaining differences in wage rates between men and women can be attributed to discrimination.

Discrimination against women exists whenever the ratio of the wages of men to women exceeds the ratio that would have existed if men and women were paid according to the same criteria. This definition yields a

mathematical index of discrimination called the discrimination coefficient.¹

Theoretical Model

The concept of human capital thus described should be explored by observation of a single individual at various stages in his worklife. However, data on wage rates of individuals over their lifespan are not generally available, and would be plagued with problems of adjustment for changes in the cost of living and purchasing power and for shifts in the level of discrimination which is being measured.

Cross-sectional data, however—that is, a set of data taken at a point in time pertaining to a large number of workers of various ages and occupations—are available and limit some of the problems that beset time series data. The data source employed in this study was the Survey of Economic Opportunity, a survey conducted in February 1967 by the Bureau of the Census for the Office of Economic Opportunity. It contains two parts: The first is a random household sample taken in the manner of the Current Population Survey; the second is a special sample taken in predominantly black areas to supply more data on this group. Altogether, the data contain information on 60,000 individuals in 30,000 households, giving place of residence, industry of employment, occupation, and personal characteristics, and hourly wage statistics as well.

In terms of these data, two wage equations were postulated, as previously indicated. The technique employed, simple regression, sought to isolate the influence of various factors upon the wage rate.²

$$^1 D = \frac{(W_m/W_f) - (W_m/W_f)^0}{(W_m/W_f)^0}, 0 \leq D < \infty; \text{ where } D \text{ is the}$$

discrimination coefficient; (W_m/W_f) represents the actual male wage relative to the actual female wage; and $(W_m/W_f)^0$ represents the relative wage of men in the absence of discrimination. The relative wage in the absence of discrimination is found by taking into account personal characteristics and will be discussed in the text.

$$^2 \ln(W_i) = K + b_1 X_i + b_2 X_i^2 + b_3 E_i + b_4 E_i^2 + b_5 Z_i + u_i, i = [1, N]$$

where

$$E(u_i) = 0 \text{ and } E(u_i u_j) = \sigma_u^2 \text{ for } i=j \\ = 0 \text{ for } i \neq j$$

See text for description of parameters. A consequence of the cross-sectional approach is that the parameters are the same for all individuals in the sample.

As can be seen in footnote 2, the factors considered were X_i , the number of years of work experience; E_i , the number of years of schooling, and Z_i , a grouping of personal characteristics.³

One of the factors included in Z , the personal characteristics, was health. The effects of poor health on productivity, and hence the wage rate, should be captured in this term.

Migration from one region to another was a further form of human capital investment included in Z . Migration as treated here took into account whether a person has moved and, if so, the number of years since he last moved.

A marital status variable was also included. It is argued that employers assume an individual's marital status corresponds to personality traits relating to success in the work environment. For example, employers may prefer married men and pay them a higher wage because they believe they are more stable than single men. However, married women are often paid less because the employer anticipates higher absenteeism and turnover rates.

Variation in wages among workers may be due in part to industry wage differentials reflecting both wage and fringe benefit factors. Accordingly, the industry in which a person worked has also been taken into account.

Similarly, occupation can be interpreted as an additional measure of ability and as an indicator of different opportunities available to various groups; therefore, individuals were also classified by membership in one of nine occupational categories.

The effects of union membership and class of worker (e.g., self-employed or wage and salaried employee) were also considered.

Regional effects were taken into account by noting which of four areas of the country the data come from.

The interactions of the above effects were also taken into account somewhat in the wage equations, which

³ Editor's Note: The number of years of work experience (X) was computed by subtracting the number of years of schooling completed from the subject's age. Since this does not take into account periods of unemployment or out of the labor force, the amount of time not at work was estimated for women in terms of children born and in the case of men was ignored, since in the author's words, "potential experience is probably a very reasonable approximation to actual years of work experience for men because of their strong attachment to the labor force." This implies that there is no extended male unemployment. However, studies of at least black men would seem to contradict this. The approach can raise questions concerning the results, since the inaccurate interpretation of these variables would result in improper weighting to the variables in Z , as well as influence the size of the error term, which is used in construction of the measure of discrimination.

weighed the relative importance of various personal and employment characteristics in determining wages.

Findings and Implications

The average wages of women appeared to peak earlier and remain lower throughout the worklife than those for men. The implication is that the experience of men is rewarded more throughout their lives than is that of women. Similarly, on-the-job learning or training contributes less to increasing the earnings of women than men, even allowing for a shorter worklife, which points to a factor of discrimination. The smaller wage reward to female on-the-job learning or training provides less incentive for women to undertake this form of education, which, in turn, makes their wage rates lower still.

The presence of young children significantly reduced the hourly wages of white women, but appeared to have little effect on the wages of black women. This finding implies that black women do not stay out of the labor force as long as white women do after the birth of a child. The longer a woman remains outside the labor force, the more her absence will cost her in terms of factors that add to a wage rate, such as tenure or seniority, as well as in terms of experience. Hence, an extended absence by a woman, say for the first 5 years of a child's life, would reduce the wage rate she could obtain when reentering the labor market. This is not a discriminatory effect, but rather reflects a predicted and rational economic reaction to this situation on the part of employers.

Health problems and part-time employment reduced the average wage rate of men more than women. Indeed, they had less influence on black women than on any other group. Again, as in the case of the effect of children, it appears that black women have a stronger labor market attachment than of white women and that they take problems of health more lightly than the other groups.

The average number of years of schooling for the groups in the sample were 11.5 years for white men and women, 10.1 years for black women, and 9.4 years for black men. Wage rates increased 4.7 percent for each additional year of school for white men, 3.3 percent for white women, 3.2 percent for black women, and 2.6 percent for black men. While the return on education was less for white women than white men, the reverse was true for blacks.

Union membership narrowed the male-female wage differential for whites, as one would expect, but widened it for blacks. Although all groups benefited from membership in a union, relative to the nonunion wage in the private (nongovernment) sector, black women benefited the least, with an estimated increase in average wage of only 7 percent. This may suggest that black women, if they are members of unions at all, are concentrated in weak unions, which have little influence on their working wages compared to the more powerful unions of large numbers of white men.

Government employment tended to benefit all four age-sex groups relative to nongovernment, nonunion workers. However, both black men and women had the greatest added benefit of working for government, with 13 percent and 14 percent higher wages, respectively, for these groups. White men showed an increase in average wage rate of 6 percent. This finding is in itself indicative of discrimination in wage rates of both blacks and women in private employment, since, in general, government employment tends to minimize discrimination in wage rates and hiring practices.

Average hourly wages were compared for the groups in the sample to estimate the gross wage differential—that is, the difference in wages between men and women before adjustment for the influence of human capital factors.⁴ The average hourly wages for the four groups were: White men, \$2.95; white women, \$1.92; black men, \$2.16; black women, \$1.45. That is, women's wages were lower than men's by 54 percent for whites and 49 percent for blacks.

The personal characteristics in the model accounted for a difference of only 26 percent for whites and 8 percent for blacks, averaging slightly different computations based on the male and female wage structures. The full-scale model, including employment characteristics as well as personal characteristics, explained an additional 20 percent of the white differential and an additional 41 percent of the black differential. However, the more comprehensive model appeared to be too conservative, since it controlled for virtually all the sources of employment discrimination against women. An implication of this finding is that most of the wage discrimination against women cannot be linked with any specific factors of employment; rather, it must be attributed to sex.

⁴ The gross percentage differential in wages was computed by the following formula:

$$\frac{\text{Wages of men} - \text{Wages of women}}{\text{Wages of women}}$$

The important implication of the study, therefore, is that the magnitude of the male-female differential and the reasons behind its existence are more important than the existence of a differential *per se*. Inasmuch as 74 percent of the differential for whites and 92 percent of that for blacks could not be explained by differences in personal characteristics, employers are either grossly underutilizing the resources and talents of women or are not properly rewarding those resources and talents.

In the future, equal pay legislation may not completely eliminate wage differences between men and women in narrowly defined, specialized occupations,

much less have any large-scale effect on the overall relative wages of women. As long as some form of market segregation is possible, wage differentials can continue to exist since the legislation requires that men and women receive equal pay for equal work only if they work at the same place of employment. If all occupational barriers could be eliminated and women were encouraged and motivated to use their talents to the fullest extent, the observed wage differential would shrink, though not disappear. However, the remaining disparity would be the result of voluntary choices, both in occupation and in social roles, leading to differences in the productivity of female workers.

FRINGE BENEFITS, THE OVERTIME PREMIUM, AND EMPLOYMENT AND HOURS IN U.S. INDUSTRY

Overtime work is ordinarily thought of as arising from unusual circumstances requiring additional production; for example, an impending strike, seasonal rush, or production bottlenecks. However, even in the absence of such unusual situations, it is rational to expect firms to undertake overtime employment as an alternative to adding workers.

If it is recognized that the cost of hiring a worker includes not only the wage rate, which is directly related to the number of hours an employee works, but also company contributions to insurance, pension, and other fringe benefits—as well as one-time costs of hiring and training a new employee—it is intuitively apparent that overtime may, in fact, be cheaper than hiring additional labor to meet production demand.

This study, uniquely based on 1966 establishment data rather than industry averages, relates the overtime in various industries to the level of the fringe benefits, termed “quasi-fixed costs,” by regression, or trend-line, analysis. It is found that there is a significant and predictable relationship between the level of quasi-fixed costs in an industry and the amount of overtime observed.

There are implications in the findings relating to the effect of raising the premium paid for overtime hours. It is estimated that an increase in the overtime premium from 1 1/2 to 2 times the straight-time hourly rate would result in an increase in manufacturing employment of 1.6 percent, or 218,500 full-time jobs. Such a rise in the premium might, however, cause firms to seek more automated means of production instead of hiring the additional workers the model predicts. Hence, it does not appear that increasing the overtime premium would be an effective method of decreasing unemployment.

Introduction

A rational manpower policy seeks to create jobs as well as to provide training for unemployed workers. The creation of new jobs has been hindered, however, by the observed tendency of employers to substitute overtime hours for additional employees, even while substantial unemployment exists. For example, in 1966, the reference year for this study, an average of 55,376,000 hours of overtime per week were worked by production workers in manufacturing industries at the same time that 3.2 percent of the manufacturing work force were unemployed. If 25 percent of this overtime had been

transformed into full-time jobs, production worker employment would have increased by over 2.4 percent.

Although a large proportion of overtime hours is due to rush orders, seasonal demand, mechanical failures, and absenteeism, a substantial amount of regularly scheduled overtime may exist. A given level of labor services is obtainable by various combinations of hours per man and number of men, and there is no a priori reason why one would expect no overtime, even in the absence of the seasonal or emergency conditions normally associated with it. Of crucial importance in influencing the optimal working hours of a firm are those labor costs per employee that do not fluctuate with the number of hours of work. The higher these

costs are relative to the overtime wage rate, the more likely it is that overtime will be substituted for additional employment. These quasi-fixed costs include those labor turnover costs and supplementary compensation benefits which are employee rather than man-hour related. The supplemental benefits include paid vacations, sick leave and holidays, contributions to pensions, other voluntary welfare and insurance plans, and some legally required payments.

To a large extent, the existence and economic effects of these fringe benefit costs have been neglected by academic economists, although recognized by those in government. The magnitude of these costs is large; the Chamber of Commerce estimated that, in 1965, fringe payments alone averaged about 25 percent of total payroll costs for the firms in its sample.¹ The growing importance of such costs and the overtime which they tend to "create," as overtime is substituted for additional workers, were undoubtedly a primary consideration in the proposed Overtime Pay Penalty Act of 1964,² which would have authorized the Secretary of Labor to increase the overtime premium in those industries where it was felt that "excessive" overtime was being used, with the hope of decreasing overtime and consequently increasing employment.

The primary purpose of this study was to construct models of a firm's short-run demand for workers and hours, to be used as a framework from which to ascertain the causes of variations within industry groups in overtime hours per man.

The study used unpublished establishment data provided by the Bureau of Labor Statistics from its 1966 survey of employer expenditures for selected compensation practices. Of major interest are tests of the hypothesis that high fixed costs per man relative to the overtime wage rate induce a substitution of overtime hours for additional employment. On the basis of these tests, implications for manpower policy, such as the wisdom of increasing the overtime premium in any given industry or size-class of establishments, can be drawn.

The only previous study which attempted to test empirically the relationship between overtime and fringe benefits was an analysis of difference between industry groups in 1959 and 1962, based on averages for

two-digit manufacturing groups.³ That approach requires assumptions about the homogeneity of production processes across industries which do not appear to be warranted. Moreover, there is a question as to whether industry group averages are appropriate units of observation. In most cases, as this study reveals, the within-group variation is substantial, and consequently regressions using group averages may obscure the underlying relationships further. It is not surprising, therefore, that the earlier study did *not* find a statistically significant relationship between overtime and the ratio of weekly fixed labor costs to the overtime wage rate.

Foundation and Specification of the Model⁴

If firms seek to produce at the cheapest possible cost that is in keeping with revenues from sales, the decision facing the firm with respect to labor is to find the combination of men and hours per man that minimizes the cost.

In terms of a model, several factors enter into this decision. The first is the supplementary, or quasi-fixed, cost per man. This is assumed to be constant for each worker, so that the total quasi-fixed cost to the firm is the cost per man multiplied by the number of men employed. The second is the cost to the firm for hiring and training workers. Again thought of as constant for each worker, the total of these costs is the product of the cost per man multiplied by the number of workers, adjusted for both the quit rate—or the number of replacement workers who will require this outlay by the firm—and for an interest rate (assuming the money used to undertake the training is borrowed). Third, because it

¹ *Fringe Benefits* (Washington: Chamber of Commerce of the United States, 1965).

² U.S. Congress, *Overtime Pay Penalty Act of 1964*, Hearing before the Subcommittee on Labor, House Education and Labor Committee, 88th Congress, 2d session on H.R. 1680 and H.R. 9802 (3 volumes).

³ S. Van Atta, "An Analysis of Overtime Hours for Production Workers in Manufacturing Industries, 1957-65," unpublished University of California at Berkeley Ph. D. dissertation, December 1967.

Using aggregate annual time-series data, Van Atta also attempted to test this relationship for 1947-65. The ratio of fringe benefits to the overtime wage rate had an almost steady upward trend during this period. Consequently her estimated coefficients may be capturing the effects of other trends, not measured in the data.

⁴ Editor's Note: The Appendix gives the empirical specification of the model, as well as a description of the data used in the analysis. All variables were derived from data collected for the Bureau of Labor Statistics (BLS) survey of "Employer Expenditures for Selected Compensation Practices, 1966."

is assumed that the firm will seek to produce an amount of output which will require overtime, the final cost to the firm will be the total amount of overtime payments (or the overtime wage rate times the number of overtime hours per man), multiplied by the number of workers. These factors fully describe the costs that the firm must minimize in its labor decision.

Finally, a familiar concept of the mechanics of the market may be devised to complete the model: Labor is furnished to the firm according to the number of men the firm seeks to employ and the wage rate that it pays.

When the mathematical relationship formed by these factors is minimized, using the Lagrangian technique, easily interpretable results are obtained. First, if those costs that are independent of the wage rate—that is, the quasi-fixed costs and the costs of hiring and training—are increased, overtime will be substituted for additional hiring, since these are costs per man rather than costs per hour of labor. Conversely, an increase in the hourly wage, the overtime premium, or the length of the straight-time workweek will have the opposite effect—new workers will be preferred to additional overtime.

Another consideration is absenteeism. The rational response by the firm to absenteeism is to increase overtime rather than hire more workers, since the quasi-fixed costs must be paid even for absent workers, but absent workers need not be paid overtime.

Several refinements of the model must finally be made to simulate firm behavior in a unionized labor environment. Two classes of labor are defined: New workers, with a lower productivity, and senior workers, with higher productivity and higher pay rates. Additionally, new workers bring about higher quasi-fixed as well as training costs.

All new hires, as well as layoffs, are assumed to occur only in the new worker class, recognizing the effect of unionization and seniority.

The model thus defined provides a justification for the fact that not all employees of a given firm work the same number of hours. The conditions under which it is rational for management to agree to union demands that overtime be assigned on the basis of seniority also flow from the model.

The theoretical model suggested that an equation with six factors contributing to the annual overtime per man be developed. The equation postulated that overtime hours depend on the ratio of quasi-fixed costs to the overtime wage rate, the establishment's scheduled weekly hours, the quit rate, the ratio of new to senior workers, absenteeism, and unionization. The measurement of these variables is described in the appendix.

Results for Manufacturing Industries

For manufacturing industries, the most striking conclusion is that the ratio of quasi-fixed costs to the overtime wage was very important in determining the number of overtime hours worked. In 12 of the 16 industries, there were only five chances in 100 that the relationship could occur by chance; in those industries in which some doubt does arise, reasons may be found in their characteristics. Two—lumber and furniture—were represented by a relatively small number of establishments in the sample. The third, transportation equipment, is dominated by the automobile industry, well known for its seasonal pattern of overtime for each specialized group contributing to production, e.g., line workers during peak production, die makers and casters during model changes, etc. Another is the stone, clay, and glass industry, which has both continuous manufacturing and seasonal fluctuation, but not much overall pattern, making study of normal as opposed to rush period overtime difficult. Nonetheless, the role of quasi-fixed costs in determining overtime was confirmed.

Another clear conclusion from the equations is that in a few industries unions might actually have been seeking to limit overtime as a means of reducing unemployment among their members.

While the conclusion cannot be held with much confidence, the interpretation of a stand-in term for the ratio of new to senior workers in the equation seems to imply that the advantage of senior workers in terms of added productivity is close to the higher wage rates they receive.⁵

It is undoubtedly true that a large proportion of overtime hours is due to rush orders, seasonal demand, mechanical failures, absenteeism, and increases in demand beyond normal capacity. But data on such occurrences are unavailable, and their omission undoubtedly hinders the explanatory power of the model. However, such situations would not influence the importance of the ratio of quasi-fixed costs to overtime wages, which is the primary conclusion of the research.

Results for Nonmanufacturing Industries

In nonmanufacturing industries, again, the ratio of quasi-fixed costs to the overtime wage was strongly

⁵ The stand-in for this variable was the ratio of employees receiving 1 week or less vacation to the number of employees receiving over 1 week of vacation.

related to the number of overtime hours. As in manufacturing, where this ratio for a particular industry was of doubtful validity, the reason could be found in the special situation of the industry. For example, payments into welfare funds for health and life insurance for employees in a segment of the mining industry are based on tons of coal produced rather than on number of men employed. Given this peculiar method of determining one important fringe benefit, the ratio would not be expected to have a significant impact on overtime in this industry.

There was some evidence that in the low-wage retail trade industry new workers were more willing than senior workers to accept overtime, although this conclusion was not statistically strong.

Finally, the nonmanufacturing sector appeared to be better suited than manufacturing to this model's techniques, perhaps because the lack of assembly line processes and man-to-machine ratios could inhibit trade-offs by firms of overtime for additional employment in specialized and technical manufacturing processes.

Conclusions and Implication for Manpower Policy

In the vast majority of both the manufacturing and nonmanufacturing industry groups, the hypothesis of overtime substitution for additional workers was confirmed, but within many industry groups both the size and significance of the relationship varied among component industries. There was similar variation across establishment size classes in manufacturing industries, but in nonmanufacturing industries, the relationship appeared fairly uniform and significant over almost all size classes. Thus, any projected response to a change in the overtime premium must be considered only as the average for an industry group, and not as a uniform reaction by all establishments in that group.

For example, raising the overtime premium from $1\frac{1}{2}$ to 2 times the straight-time hourly wage, as was proposed in the Overtime Pay Penalty Act of 1964, would decrease the ratio of weekly quasi-fixed costs per man to the overtime wage rate in manufacturing by 25 percent. This decrease would reduce annual overtime per man, with the decrease in industry averages ranging

between an insignificant 5 hours and a substantial 123 hours per year, or 2 and 43 percent. For 12 industries, the reduction would exceed 10 percent. Apparently a significant portion of overtime hours worked in manufacturing industries in 1966 could have been eliminated by this increase in the overtime premium.

If total man-hours demanded by each establishment remained constant and all decreases in overtime were translated into new employment opportunities for full-time work (i.e., 2,000 hours per year), the increase in employment would be remarkably stable—between 1 and 3 percent for the majority of the manufacturing industries. Applying these estimates to actual factory production worker employment levels for 1966 yields an overall increase in employment of 1.6 percent, or approximately 218,500 full-time employees. Naturally, if part of the decrease in overtime were translated into part-time employment opportunities, the benefits would be spread over a larger number of the unemployed.

In nonmanufacturing establishments that reported overtime work, the results were similar. Again, for the majority of the industries, the estimated percentage increases in employment were on the order of 1 to 3 percent. Since many nonmanufacturing establishments reported zero overtime and were excluded from the analysis, however, the actual percentage increases in total employment would be substantially smaller.

The estimates presented here at best provide upper bounds to the true employment gains. Little is known about the probable reactions of currently employed workers faced simultaneously with an increase in the overtime premium and a reduction in hours of work. One plausible response would be increased moonlighting at part-time jobs, thereby reducing the creation of new jobs for the unemployed. More crucially, the assumption that an increase in the overtime premium would not change firms' total man-hours demanded is obviously erroneous. An increase in the overtime premium raises the cost of labor services relative to capital services and should induce a shift toward more capital-intensive methods of production. Moreover, if product prices also subsequently rise, decreasing product demand, then total man-hours demanded will decrease even further.

Data were not available to assess the probable magnitude of each of these effects. Nevertheless, it was apparent that the actual impact of an increase in the overtime premium on employment would be smaller than the estimates presented here.

Hence, it does *not* appear that increasing the overtime premium would be an effective method of decreasing unemployment, even though annual overtime hours per

man are significantly and positively related to the ratio of weekly fixed supplementary labor costs per man to the overtime wage premium in a majority of industries. If further research indicates greater uniformity in the

ratio across size classes of establishments within each manufacturing industry, however, an increase in overtime premium to decrease unemployment during a future noninflationary period could be workable.

Appendix

Given the necessary levels of output, technology, and flow of capital services, a particular firm's required flow of labor services can be determined from an economic production function. The firm's decision is to choose the combination of men and hours per man which will produce that flow, at the same time minimizing its labor costs. Symbolically, the problem is to:

$$(1) \text{ Minimize } w_1 M + (r + q)TM + w_2 \overline{MH} + w_2 bM \\ (H - \overline{H}), \text{ where } b > 1$$

$$(2) \text{ subject to } L = F(M, H)$$

$$\text{where (a) } F_1, F_2 > 0$$

$$(b) (2F_1 F_2 F_{12} - F_1^2 F_{22} - F_2^2 F_{11}) \\ - (2F_1 F_2^2 / M) > 0$$

Here w_1 represents those supplementary employment costs per man which are quasi-fixed in the sense of being independent of the exact number of weekly hours that each employee works, as indicated earlier, and M is the number of men employed. Some of these costs are annual, others monthly, and still others weekly; the assumption here is simply that the employer pays for them on a weekly basis. The next term represents the "user cost of labor." T represents the once-over turnover and investment costs per man of hiring and training workers. If these costs are financed by borrowing, they must be discounted by the interest rate (r) and adjusted by the quit rate (q) to take account of replacements. Under the assumption that the desired production level will require overtime, the wage costs per man are the wage rate (w_2), times the maximum number of hours per man payable at straight-time wages (H), plus the overtime wage rate ($w_2 b$), times the number of overtime hours per man ($H - \overline{H}$).

The constant in equation (2) asserts that the flow of labor services (L) is a function of the number of men employed (M) and the number of hours paid for per man (H). Here the assumptions are that the marginal contribution of labor services of each input is positive and that the necessary condition (2b) is met for the optimizing problem to yield a minimum. This condition requires that the marginal rate of substitution of men for hours has the familiar convex shape to the isoquant.

Minimizing (1), subject to (2), yields an equilibrium combination of men and hours per man (M^*, H^*). In particular:

$$(3a) H^* = h(w_1, r, q, T, w_2, b, \overline{H}, L) \\ h_1, h_2, h_3, h_4 > 0, h_5, h_6, h_7 < 0$$

where

$$(3b) M^* = m(w_1, r, q, T, w_2, b, \overline{H}, L) \\ m_1, m_2, m_3, m_4 < 0, m_5, m_6, m_7 > 0$$

Theoretical considerations, as well as the available data, suggest that the following relationship be estimated empirically.

$$(4) OT = a_0 + a_1 \text{RATIO} + a_2 \text{STD.HRS} + a_3 \text{WAGE} + \\ a_4 \text{NEWSEN} + a_5 \text{ABSEN} + a_6 \text{UNION}$$

OT is observed annual overtime per man. RATIO is weekly "quasi-fixed" costs per man divided by the overtime wage rate. This variable is entered in ratio form, $\frac{W_1}{W_2 b}$, rather than entering the two parameters independently, in order to avoid a potentially severe collinearity problem, since establishments with high wage rates also tend to have high quasi-fixed costs. RATIO is calculated by including in the numerator all

nonwage labor costs for which data are available.⁶ The theory predicts that the coefficient of this variable be positive.

Direct counterparts of the other explanatory variables were not available from the survey data, and consequently proxy variables had to be constructed for each, as follows:

- a. **STD.HRS (\bar{H})**—A dummy variable which takes on a value of 1 if an establishment's scheduled weekly hours were 40 or more and 0 otherwise. From (3), it is predicted that this variable's coefficient will be negative.
- b. **WAGE (q)**—A proxy variable for the quit rate, which was not available from BLS. The assumption underlying this variable is that the higher an establishment's mean wage relative to the mean wage in other establishments in the industry, the lower the quit rate is likely to be. The establishment's mean wage divided by the mean wage of other establishments in the industry is used.
- c. **NEWSEN**—A proxy for the ratio of new to senior workers, and takes the form of the ratio of those employees who receive 1 week or less paid vacation a year to those who receive more than 1 week. The sign of this variable will show whether overtime is assigned to senior employees or new employees; a negative sign indicates senior employees work longer hours than new workers. It is not possible to predict the sign of this variable.
- d. **ABSEN**—The ratio of paid sick leave hours to total hours worked is a proxy for the absentee rate. It is assumed that, within an industry, absenteeism is a constant multiple of the amount of paid sick leave available. The coefficient of this variable is expected to be positive. However, if the within-establishment variability in the absentee rate increases with the establishment's mean absentee rate, then the stochastic effect might lead this coefficient to be insignificant or negative.
- e. **UNION**—A dummy variable which takes on the value of 1 if the majority of the establishment's employees are covered by collective bargaining agreements and 0 otherwise. This variable is intended to capture the impact of union rules

which require overtime pay for Saturday, Sunday, or holiday work, regardless of the previous number of hours which an employee worked.

Empirical Specification—Manufacturing

For the 16 two-digit (SIC) manufacturing industries with a sufficient number of establishments to conduct a meaningful analysis, equation (4) was estimated, using ordinary least squares. The coefficient of the **RATIO** variable was positive in all 16 manufacturing industries, with at least the 95-percent level of significance in 12. Despite the four industries in which the coefficient was not significant, (see text), the role of the quasi-fixed supplementary compensation costs in influencing the overtime—employment tradeoff in U.S. manufacturing industries was confirmed.

The remaining variables in equation (4) are all proxies for true explanatory variables for which there were no direct observations. This, coupled with the insignificance of most of their coefficients, makes it more difficult to test the initial hypothesis. Nevertheless, the coefficient of **WAGE** was negative in almost all cases, as expected, although statistically significant in only three. **ABSEN** had a negative coefficient in 10 of the 16 industries, but was statistically significant in only one case. If this variable is a good proxy for the absentee rate, it may indicate that the variability of the absentee rate within an establishment does increase with the mean level. **STD.HRS** proved to be a poor proxy; its coefficient was in the main insignificantly different from zero in the intraindustry regressions, although, as expected, it was negative in the one case that it was significant. **UNION** was significant in four industries, but in three of the four its coefficient was negative. The implication may be that in several industries unions may actually be seeking to limit overtime as a means of reducing unemployment among their members. **NEWSEN** had a statistically significant coefficient in only four industries, and in only one was the coefficient negative, indicating that, as the classes are defined here, senior employees work longer hours than new employees. The failure of this coefficient to be significantly different from zero in the remaining industries is not disturbing, however, since a coefficient close to zero indicates that the relative hourly productivity advantage of senior workers (**K**) is approximately equal to their relative cost disadvantage ($1/y$). Internal wage structures are likely to evolve this way over time.

Disaggregation into three-digit industry groups appeared to be necessary. Other than the significant

⁶A more theoretically appropriate measure which included in the denominator those fringe costs that vary directly with hours of work was also calculated. The correlation between the two measures was exceedingly high in all industries (at least .97) and regression results, using the alternative variables, differed only marginally.

positive coefficient for STD.HRS, the results were consistent with the two-digit results. However, the results of a standard statistical test (a Chow test) indicated that the hypothesis that the set of estimated regression coefficients is identical across industries can be rejected with almost certainty.

A large proportion of overtime hours is believed to be due to such phenomena as rush orders, seasonal demand, mechanical failures, and recent rates of increase of demand relative to capacity. Data for such variables were unavailable at the individual establishment level, and their omission is undoubtedly responsible for the low explanatory power of the model. However, the estimates of the *RATIO* coefficients should remain unbiased. Primary interest ultimately is in this coefficient and not in the explanatory power of the model as a whole.

Empirical Specification—Nonmanufacturing

The theoretical framework discussed above is probably more appropriate in the low-wage service and trade sectors than in the manufacturing industries, since it assumes that a firm may obtain any desired supply of labor at a given wage. In estimating equation (4) for each of the eight major industry groups, the most striking finding again is that, in six of the eight nonmanufacturing industry groups, the coefficient of the *RATIO* variable was positive and different from zero at least at the 95-percent level of significance.

The coefficient of wage was negative in six of the eight industries and significant in three. In addition to capturing the impact of the quit rate, several other plausible explanations may exist for this relationship. First, low-wage firms in an industry may attract the lowest quality workers. Hence, to achieve a given level of labor services, these workers must work longer hours and more overtime. As long as the total labor bill is not

increased above the level that the firm would incur if it employed more labor at higher wages and fewer hours per man, the firm will not object to increased overtime.

NEWSEN was significant in only two of the eight industries and positive in both cases. The positive coefficients, especially in low-wage retail trade, may reflect a greater willingness by new workers than higher paid senior workers to accept overtime. NEWSEN might also serve as a proxy for recent demand variations or the quit rate.

ABSEN was negative in six of the eight industries and significant in two, a finding again similar to the manufacturing results. This may once more indicate that the variability of the absentee rate is positively related to its mean value for each establishment.

Finally, STD.HRS was mixed in sign, and primarily insignificant, as was UNION, which was negative in six of the eight nonmanufacturing industries.

The results for nonmanufacturing appeared to be, for the most part, "better" than the comparable results for the manufacturing industries in terms of the overall significance of the *RATIO* coefficients. This is not surprising in the light of larger sample sizes and probably fewer problems with fixed men-machine ratios and assembly line processes in the nonmanufacturing industries which can prevent the employment-hours trade-off from occurring. Moreover, in most cases the production processes appeared to be fairly uniform within industries, even between firms of different size classes. This would also tend to add to the significance of the coefficients of a regression estimated, as these are, across all size classes of firms within a given industry.

Finally, as with the manufacturing data, an overall regression, using observations from all eight nonmanufacturing industry groups, was estimated. Once again the statistical significance of all the coefficients increased, but a Chow test indicated that further breakdown of the data was necessary.

RELATIVE WAGE DETERMINATION AMONG INDUSTRIES: SOME THEORETICAL AND EMPIRICAL RESULTS

Governmental policy that leads to an increase in unemployment will be more costly to workers in highly competitive low-wage manufacturing industries, since tightening of the labor market leads to a narrowing of relative wage differentials. Conversely, high rates of inflation, while hurting workers in all industries, create partially offsetting benefits for workers in low-wage industries. Findings such as these may offer new insight to officials concerned with the problem of keeping a check on inflation and unemployment.

To study the way in which manufacturing industries change their wages in response to economic conditions, this dissertation utilizes relative wages, or the ratio of the average wage of a particular industry group to the average wage of all manufacturing industries. Relative wages are studied from the standpoint of both national and local labor markets. For the latter, the hypothesis established in the national data is tested successfully on the Boston labor market.

Differences in wage response to changes in the economy, as reflected by the labor market, are important for two reasons. First, they indicate how efficiently the labor markets are operating. Second, and more important, they can guide the success of national labor market policy and have implications for the welfare of specific groups of workers under policies geared towards lowering unemployment or, alternatively, lowering inflation rates.

Introduction

As the demand for business output rises and falls, changes in the level of demand for labor affect not only the size and composition of the labor force, but also the wage rates in various industries. Past research has examined several questions in wage determination; the most important of these has been the question of what determines wages in a single locality at a given point in time. Most investigators conclude that certain wage inequalities are not explained by the competition in labor markets and that they are due largely to variation

in the degree of control different industries have over their products and labor markets.

Because market control moves business organization away from perfect competition, which according to theory is the most efficient system to allocate resources, relative wages are important to an understanding of the workings of a noncompetitive labor market and efficiency in the allocation of labor resources among sectors of the economy.

A relative wage, in the context of this study, is the ratio of the wage rate in one industry to the wage rate that prevails in all manufacturing industries. Hence, it is possible that a relative wage may narrow, or the industry's wage move closer to the overall wage, even in the face of wage increases in all industries.

Framework and Precedents of the Model

A theoretical precedent for this study is the work on industry wage equations by Eckstein and Wilson.¹ These researchers were the first to include "spillover" effects, that is, the direct influence of one industry's wages in the determination of another industry's wage. Industries are divided into the "key group," or high-wage, non-competitive industries, such as primary metals or rubber, characterized by unionization and market size, and the "nonkey" group, or low-wage, competitive manufacturing industries.

According to this concept, wages in the key group are set by collective bargaining, with the unemployment rate and profit rate of the firms as prime bargaining factors.² Wages in the nonkey group are explained by a spillover effect and a proportion of the key wage.³ The notion of the spillover effect is explained largely by institutional forces.⁴

In the model employed in this study, wages in high-wage industries are viewed as determined in a bargaining context, with the major bargaining variables being the unemployment rate and a measure of ability to pay. Intuitively, one may view the unemployment rate as generating management willingness to hire, since high unemployment means greater ease in obtaining additional workers, and the ability to pay as generating labor opinion as to reasonable demands to make upon the industry.

In the present model, the spillover from the non-competitive sector will not be taken as a constant proportion of the key-group wage, but rather a variable proportion determined by the aggregate unemployment rate and a measure of the labor demand in low-wage industries. Thus, while Eckstein-Wilson thought of the spillover as arising from stable institutional forces, and hence relatively constant, here the spillover is perceived as arising from factors of labor supply. Hence, spillover effect can vary with the tightness of the labor market.

Because the labor market is more correctly thought of in terms of occupational rather than industrywide wages, the concept of an internal labor market is seen as the mechanism which controls the occupational wage structure. That is, the job structure of a firm consists of jobs unique to the individual firm and of key jobs that have supply and demand in the general labor market.

The internal wage concept suggests that relationships exist among jobs within a firm that are not determined by the labor market. The organization of a firm is dictated by the ability to substitute cheaper technology for labor, and wage structure is thus often viewed as determining the value of labor relative to capital goods and mechanized processes that can be substituted in production. Further, wage differentials among jobs are primarily a function of the job's importance in the productive structure. To achieve stability in internal differentials, firms are thought to follow a policy of changing all occupational wages by similar proportions.

Basis of the Model

The theory of wage structure underlying the model of this study is based upon two hypotheses. The first is that differences among industries in the competitive structure of both their product and labor markets result in wage inequalities for given skill levels. That is to say, if two workers have exactly the same degree of skill, training, and ability and differ only in that they work in industries of dissimilar size and market power, this difference alone will result in wage variation.

The second hypothesis is that the relative wage of the firm is also influenced by factors other than market power, particularly the difference between the demand by an industry for labor and the existing supply, referred to as the excess demand condition of the labor market.

Excess demand conditions that influence the relative wage of industries are somewhat related to market power, however. During periods of low unemployment, low-wage industries find it more difficult to attract and

¹Otto Eckstein and T. A. Wilson, "Determination of Money Wages in American Industry," *Quarterly Journal of Economics*, August 1962, pp. 379-414.

²Key group wage W_k is expressed: $W_k = a_1 + a_2U + a_3R$ where a_1, a_2, a_3 are regression coefficients to be estimated, U denotes the unemployment rate, and R the profit rate.

³Nonkey wage W_{nk} is: $W_{nk} = b_1 + b_2W_k$.

⁴The spillover effect refers to the tendency for industries to copy each other's rate of wage change. A number of writers have investigated the spillover, and while all seem convinced of its existence, there are differences over the factors contributing to its existence. Some feel that it is the result of market forces; others that it is the result of bargaining and custom, i.e., institutional forces. The differences are moot, for the purposes of this study, and the spillover is assumed to arise from economic forces.

Another controversy involved with the spillover effect is the question of direction. It is often held that the spillover is upward: the low-wage-group industries adjust their wage charges to the wage policy of the high-wage group. Others hold the spillover to act in the opposite direction; again, in this context, the direction is not important, and while the model in the dissertation assumes that the spillover is from the high- to the low-wage group, in an attempt by unions to keep a wage premium, the opposite response is permitted.

maintain the number of workers they need to produce at the desired level at the wages they are offering, because of the attractiveness of the high-wage industries. Therefore, they begin to bid up the wage in hopes of attracting additional workers. In times of high unemployment, low-wage industries need not alter their wage structure, since the supply of labor is ample. Wage increases, therefore, are not as rapid in this sector. In addition, union demands may still cause wage increases in the high-wage sector, which is insulated against much of the unemployment.

Ability of low-wage industries to alter their relative wages and narrow the wage structure depends also upon the actions of the high-wage industries. It appears clear that high-wage industries likewise show variation in their wage structure over business cycles. High-wage industries, however, because of their market structures and degrees of unionism, pay wage premiums to their workers and have some discretion in the timing and amount of their wage changes through contract periods. High-wage industries gain by adopting a wage change policy that permits them to maintain high wages but at the same time allows the low-wage industries to gain on them when labor markets are tight.

Some reasons for this behavior may be found in the actions of labor unions. Initially, unions tend to be more interested in wage developments in the industries in which they operate than in the wage situation as a whole. Second, unions are interested in certain wage increases during loose labor markets, even at the expense of a slower growth during tight labor markets. Finally, contract periods tend to introduce lags into the response of high-wage industries to changes in labor conditions.

In addition, high-wage industry policies may be due to firm control of the product market, including prices. If high-wage industries use target pricing (in which price is determined more by production (labor) costs than by demand for the output) rather than competitive pricing, the preferred wage policy is one which is predictable and not sensitive to cyclical changes in labor or product demand. This is in contrast to determination of competitive industry wage rates. Thus, high-wage policies are likely to be largely insensitive to cyclical changes in labor conditions.

As a result of the tendency of competitive, low-wage industries to raise wages in tight markets and the tendency of noncompetitive, high-wage industries to ignore cyclical changes, the wage structure tends to narrow during tight labor markets and widen during periods of high unemployment.

The goal of this study is to test this line of reasoning, first in general terms, to establish its validity, and then

to devise a method whereby the size of the relative wage may be determined for a particular industry, by using information about changes in the unemployment rate, price levels, and other economic activity.

Testing the Theory

To provide an initial test of the theory, a wage dispersion relationship was formed. This measure, the coefficient of variation, is the simple average of the straight-time hourly earnings (or wage rates) of the Standard Industrial Classification (SIC) two-digit manufacturing industry groups, divided by the standard deviation—a measure of the spread of wage rates around the average.⁵ When this relationship was tested on data derived from *Employment and Earnings Statistics for the United States, 1909-1968*, for the period from 1947 to 1967, the equation⁶ was shown to accurately describe the data, explaining over 98 percent of the variation in the data observations.

Of particular interest are the price terms in the equation. First, inflation had a net widening effect on the wage structure, unless the rate of inflation was very high. The maximum effect, it appears, occurred below a 4 percent annual rate. Nonetheless, the overall impact of changes in the price structure on the interindustry wage structure was quite small. Further, the reaction of wage changes to changes in the price level was not linear; a rise in the Consumer Price Index did not bring a proportional rise in wage rates.

⁵ The coefficient of variation will indirectly yield information about shifts in the relative wage structure. An example will perhaps clarify this point. Assume that there are five industries with wage rates as follows: A-2, B-3, C-4, D-5, E-6. The simple average of these five wage rates is 4. The standard deviation is the square root of the sum of the squares of the differences between the five wage rates and the average: $\sqrt{(2-4)^2 + (3-4)^2 + (4-4)^2 + (5-4)^2 + (6-4)^2}$ or $\sqrt{10}$. Now, if all wages were doubled, the standard deviation would also double. Hence, a proportional change in all wages is shown to leave the coefficient of variation unchanged. However, if only one or two industries changed their wages, or if all were changed by different proportions, the coefficient of variation would change. If the coefficient of variation is related to the unemployment rate and a measure of change in prices, and this relationship is shown to be valid, then a change in the coefficient of variation establishes the hypothesis that not all industries are influenced by these forces to the same degree.

⁶ The coefficient of variation equation to be estimated is then: $CV_t = a_0 + a_1 KW_t + \Sigma b_i U_{t-i} + \Sigma c_i P_{t-i} + \Sigma d_i P_{t-i}^2$. The reciprocal of the unemployment rate is substituted for the unemployment rate, because of the assumption that at high levels of unemployment the wage variation becomes insensitive to further increases in unemployment. Secondly, a Korean war dummy variable, KW, is added,

As would be expected from the theory, there was a greater spread of wages among industries, when the unemployment rate was higher. This conclusion, too, shows great statistical accuracy.

The dispersion analysis tested the basic hypothesis, but it did not directly indicate the response of relative wages for any particular industry. To obtain relative wage equations for particular industries, a different form of analysis was necessary. Specifically, a relationship of factors of the labor market and the economy and the ratio of average hourly earnings of a given industry to the simple average of hourly earnings in all manufacturing was postulated.⁷ In keeping with the previous discussion, the competitive industry equations were formulated in terms of a competitive market model, and the noncompetitive industry equations were formulated in a labor-management context.

Wage determination in the noncompetitive industries was assumed to be influenced by three basic factors. The first, the spillover effect, was included because of the assumption that high-wage industries attempt to keep a wage premium over the competitive wage. The second, ability to pay, was included because of the role that market power of the industry plays in union negotiations. The third was the aggregate unemployment rate.

Results of the Equations

Relative wage equations were estimated for each of the SIC two-digit manufacturing industry groups. The most significant finding is the behavior of the unemployment rate, which was largely in keeping with the response dictated by the theory: Those industries in which rises in the unemployment rate caused a reduction in the size of the relative wage—that is, caused the industries in question to raise wages—were those industries that would be categorized as low wage. In all but two industries, food and rubber, the influence of the unemployment rate was explainable by the structure of the markets, as predicted.

A second result is that the change in consumer prices was of little significance in affecting relative wages: Price changes were significant in only six industry groups, and the sign of the term, which would indicate the direction

of the effect, was not consistent. It is suggested that during the Korean war, noncompetitive industries faced a reduction in their relative wages, when all other factors for that period are taken into account.

The effects of the other factors were difficult to determine with confidence; however, the relationship of the unemployment rate to relative wages in the high- and low-wage sectors was established as being in keeping with the theory.

Behavior of Relative Wages in Local Areas

Changes in interindustry wage structure can also be observed in local data. Use of published wage data is plagued by problems of comparability and the frequent suppression of some relevant information to protect the anonymity of reporting firms. This study used data obtained from a private, unpublished wage survey of the Boston area for the period 1959 to 1969, which avoided such problems.

Instead of using the idea of key-nonkey groupings, the concept of wage contours was employed. A wage contour is thought of as a group of wage-determining units—firms—which are linked together by similarity of product market and a common labor market organization. There are three dimensions to wage contours, each of which gives rise to a variable to explain wage inequalities.⁸

The first dimension of a wage contour is the product market. The two largest divisions among the survey firms were electronics and finance. No additional breakdown was warranted, given the limitations of the data; further, these two divisions will indicate whether a firm is a high-wage or a low-wage firm.

The second dimension is the geographical boundaries of the labor market. To indicate this dimension, the author constructed a dummy variable having a value of 1 if the firm was in the Boston city limits and 0 if the firm was in the suburbs. A second dummy variable defined the location of the parent plant of a multiplant firm, with a value of 1 if the parent was in Boston and 0 otherwise.

⁷The relative wage equation has the ratio of the average wage of the industry to the average wage of all manufacturing industries as the dependent variable and relative value added V/V^* , the unemployment rate U , a time trend T , and a Korean war dummy variable as independent variables.

⁸All variables derived from the wage contour dimensions are dummy variables, because of the lack of quantitative data for the individual firms in the survey and the nonexistence of aggregate data in a form applicable to the dimensions of a contour.

The third dimension is labor market organization. Again, a dummy variable was used, having a value of 1 if a union was present, and 0 if no union was present; no estimate of strength of unionism was available.

Wage contours explain wage inequalities; the hypothesis is that differences between contours change over the course of the business cycle, being influenced by the unemployment rate and other economic factors, but that the contours themselves do not change. Hence, the implication is again that wage differentials between different industries (or, in this case, groups of firms) will continue over the business cycle but change in size.

In analyzing local rather than national labor markets, one must pay attention to firms (or plants of multiplant firms) that determine their wages by considerations largely external to the local labor market. If a plant's wages are determined by a contract also applying to plants outside the local area, local market conditions are unimportant, and analysis of local data is meaningless.

The existence of these "foreign firms" leads to imprecision in forecasting cyclical variation in a local market's wage structure. The result is that the identity of the specific firms in the market must be utilized in forecasting the direction and speed of changes in the wage structure.

Wage indexes, in view of the relative wage equations used in the national analysis, were created to test the hypothesis that wage differentials are not random but determined by the wage contour mechanism. To construct the indexes, the simple average of three available sets of wage data was calculated for each occupation included in the indexes: the average wage paid in an occupation, the minimum wage for an occupational category specified by the firms, and the maximum wage specified. Three indexes were thus constructed, for the skilled, unskilled, and clerical groups.

These indexes were thus regressed against the variables derived from the wage contour theory, to determine whether the variables explained the size of the wage indexes for the three groupings. The results suggested that, at least in the unskilled and clerical labor markets, the observed wage differentials were explained by wage contour variables. The implication of the skilled worker index is that the differentials observed in the study period could not be explained by wage contour variables, probably because of problems of measurement and definition.

Given the observation that systematic wage differentials did exist, it was possible to observe the behavior of the differentials over the course of a business cycle. It was found that the unskilled wage index increased

between 1960 and 1965, with the greatest increase coming by 1961, and then decreased between 1965 and 1969. This behavior is consistent with the relative wage hypothesis that relative wages should fall during periods of declining unemployment, and vice versa. Further, the wage differentials in the unskilled labor market were systematically related to the presence of a trade union: If a union was present, the size of the differential decreased.

Finally, the implication overall is that as labor markets tightened, the differences in wages between contours narrowed, but the identification of different firms remained discernible.

Conclusions and Implications

The basic model was tested successfully and the results strongly supported the cyclical interindustry wage pattern hypothesis. Several other hypotheses were also tested successfully on the aggregate data. First, it was found that changes in relative wages among the high- and low-wage sectors were determined not just by the current unemployment rate but by a lagged unemployment rate, which implies that responses to changes in unemployment were not immediate. Second, besides the unemployment rate, specific industry effects had an impact on relative wages. That is, the industries with the largest increase in product demand, and thus the largest increase in the derived demand for labor over the business cycle, had the greatest increase in relative wages. Finally, the evidence provided some support for the notion that the wage structure narrows during periods of rapid inflation and widens when prices are relatively stable, all else being equal.

The data for the Boston labor market were used in an initial attempt to establish a wage contour model for a local labor market. This was perhaps the first attempt to provide a statistical rather than descriptive test of the wage contour theory. Several conclusions were reached in this study. First, the firms in the Boston survey could be divided into wage contours where the contours represent product market factors, unionization, and location. Second, wage inequalities among firms, standardized to compensate for employment of different occupations, were observable for unskilled and clerical workers but not for skilled workers. This finding substantiates the view that, even during periods of relatively high unemployment, competition among firms

for skilled workers is sufficiently great to preclude inequalities among industries. Third, during the tightening of the labor market between 1965 and 1969, wage differentials narrowed; however, the basic contour outlines as defined were still observable.

Results from the Boston labor market data should be viewed as tentative, since this dissertation has only attempted to define an initial approach to the long-neglected statistical testing of models of local labor markets.

A number of policy conclusions may be drawn from the overall results. First, a tightening of the labor market tends toward a narrowing of the wage structure. Therefore, it is clear that any governmental policy that leads to an increase in unemployment will be more costly to workers in the competitive sector. Hence, deflationary, monetary and fiscal policy has a discriminatory effect, hurting not only those workers laid off but also those who work in the competitive industries. A second finding is that high rates of inflation may in fact benefit the workers in the low-wage industries relative to those in the high-wage industries. Third, while it has been

argued that the narrowing of the wage structure between 1962 and 1967 was due to the effect of the guideposts policy in restraining wages in the high-wage sector, the present findings suggest that the narrowing can be ascribed to the competitive supply mechanism, thus casting some doubt on the efficacy of the guideposts.

This study also points to further research that could guide policy. Its results suggest that the relative wage mechanism may have implications for the ability of the economy to sustain both low rates of inflation and low unemployment. In particular, a conflict may exist between the desire of the high-wage firms to maintain their wage premium and the necessity for the low-wage firms to establish a competitive wage position. Furthermore, the findings that the wage structure narrows during periods of low unemployment suggest that the low-wage sectors may emphasize a wage policy rather than permit a substantial downward adjustment in worker quality. If this were confirmed in further research, it could strengthen the case for maintaining manpower training programs even during periods of low unemployment, to encourage employment and training of those with inadequate skills.

CAREER PATTERNS AND WORK PARTICIPATION OF GRADUATE FEMALE SOCIAL WORKERS

The high dropout rate of professionally trained women from the labor force is a matter of widespread concern. This study is an effort to determine some of the main factors affecting the career commitment of women trained as social workers.

Findings indicate that the women who never married have worked, and worked in their chosen profession, more than women in other marital status categories. Those who have married have been employed—as social workers and in general—a lower proportion of their postgraduation lifetime. When the married group is further divided into those who completed their graduate education before marriage and those who completed it afterward, the latter group is found to have spent a higher proportion of its time in the labor force.

Limitations of the sample studied make generalizations from the data tentative at best. However, the author offers several suggestions for increasing the labor force participation rate of women with professional training.

Introduction

One need only glance at a recent magazine or newspaper to be reminded of the present concern about women and their place in society. When the woman's economic functions extend beyond the home, issues arise with regard to equality of employment opportunity between the sexes, full development of human potential, and meeting manpower needs. For the woman herself, the issue of whether to combine homemaking and employment or to choose between the two—simple on its surface—is in fact a highly complex one. The factors influencing a woman's career decisions have both economic and social significance. This dissertation is based on a study of career patterns of female social workers, yet its focus is not as narrow as it seems: The responses of the 40- to 60-year-old women who comprise the study sample may provide insight on some basic questions about women and work.

To account for the work history of these women, the study examined early occupational choice and attitudes toward work and sex roles, as well as subsequent professional education and marital status. Career pattern types were obtained by linking sex-role attitudes with the sequence of marriage and education. In addition, the study considers present attitudes toward work and sex roles, and marital status, as they relate to current employment and professionalism.

Data were gathered by questionnaire from women born between 1907 and 1927 who had obtained a master's in social work (MSW) degree. From lists of graduates from 10 schools of social work,¹ a sample of

¹ Columbia University School of Social Work, University of Denver Graduate School of Social Work, The George Warren Brown School of Social Work of Washington University, Howard University School of Social Work, The University of Michigan School of Social Work, University of Minnesota School of Social Work, University of Pittsburgh Graduate School of Social Work, Richmond Professional Institute, St. Louis University School of Social Work, and Simmons College School of Social Work.

about 1,800 was drawn and 1,037 provided data for this study. Although a representative sample was sought, no claims are made that it represents a larger population because the characteristics of nonrespondents could not be determined.

Predicting Work Levels

Essentially, the study tested a number of hypotheses based on the assumption that variations in the amount of work done since earning the MSW degree could be explained by early sex-role ideology, occupational choices, sequence of marriage and education, and career patterns.

Work Ratios

The work history data were reduced to two work ratios which became the dependent variables. The ratios are the percent of total months between the date of the MSW degree and the survey date in which the woman was employed at any job—the “all work” ratio—or at a social work job—the “social work only” ratio.

Early Attitudes and Ambitions

Sex Roles. Three sex-role ideologies were identified on the questionnaire, and respondents were asked to indicate which of these views they had held during high school and which they held now. The ideologies listed were:

1. *Homemaker*—Sees the home as a woman's principal interest and believes that outside activity should not interfere with this interest.

2. *Individualist*—Sees important differences between the roles of men and women, so that women conduct the homemaking activities, work in fields that are essentially an extension of home activity (such as nurturant or service jobs),² and are responsible for devising individual solutions for any conflict in their dual roles.

3. *Egalitarian*—Sees men and women in essentially equal and similar roles in the home as well as in the workplace; tends to believe that the solution to conflict in a dual role for women lies in reorganization of the social system.

The distribution of the sample among these categories is shown in table 1.

Early sex ideology, defined in this manner, did not predict the work ratios of graduate social workers. In fact, homemakers had worked more than the others in social work, and were tied with egalitarians in the all work ratio. It would appear that overriding aspects of the respondents' later lives weakened the effects of early sex role ideology. For example, more homemakers (14 percent) than egalitarians (7 percent) had husbands with

TABLE 1. SEX-ROLE IDEOLOGY,¹ SEQUENCE OF MARRIAGE AND EDUCATION, AND CAREER PATTERNS² OF FEMALE GRADUATE SOCIAL WORKERS

Ideology, sequence, and pattern	Number	Percent
Early sex role ideology: ¹		
Homemaker	245	24
Individualist	397	39
Egalitarian	367	36
Total	1,009	100
Sequence of marriage and obtaining master's degree:		
Married after	381	38
Married before	364	36
Never married	264	26
Total	1,009	100
Career pattern:		
Homemaker: Married after	80	8
Married before	92	9
Never married	73	7
Individualist: Married after	155	15
Married before	131	13
Never married	111	11
Egalitarian: Married after	146	14
Married before	141	14
Never married	80	8
Total	1,009	100

¹ See text for definition.

² Include only those women (97 percent of all respondents) who designated themselves as holding some ideological position during high school.

NOTE: Detail may not add to totals because of rounding.

² Nurturant jobs are those which involve training or helping others, such as nursing, teaching, or counseling. Presumably, such work calls for empathy and a desire to aid others.

periods of unemployment of 6 months or more since 1960. In addition, more homemakers than egalitarians or individualists had husbands in nonprofessional occupations.

Occupational Choices. Information on early occupational choices was drawn from a questionnaire item which listed 13 specific occupations (e.g., secretary, doctor, dentist), along with "other (check and specify)" and "no particular occupation." Respondents were asked to indicate the fields which they had seriously considered at various stages in their lives, ranging from before high school to after college. These aspired-to occupations were rated on five dimensions:

1. *Femininity*—Derived from the trend in the proportion of jobholders reported as women in census data for 1920-67.
2. *Visibility*—The absolute number of women in that occupation, according to census data for 1926-67.
3. *Nurturance*—Presence or absence of this characteristic was rated by the researcher, based on her knowledge and impression of the nature of the occupation.
4. *Income*—Derived from data on median earnings of men by occupation in 1960, as reported in the Current Population Survey of the Bureau of the Census.

5. *Prestige*—Drawn from the Duncan Socioeconomic Index.³

These occupational aspiration measures, with the exception of the prestige measure, also did not satisfactorily predict work ratios. The prestige measure had a small influence on work ratios, with those showing interest in high-prestige jobs having the highest work ratios. Of course, as with all retrospective data, sex roles and occupational choices may have been affected by the unmeasurable influence of recall lapse.

Sequence of Marriage and Education

A questionnaire item asked whether subjects were married before, after, or during their professional education. The small group (less than 5 percent) married during their education was combined with the "after" group for analysis.

Marriage-education sequence seems to have had an important effect on work level, as shown in table 2.

³ Albert J. Reiss, *Occupations and Social Status* (New York: The Free Press, 1961). The Duncan Socioeconomic Index is a ranking of all census occupations on a 0 to 100 scale of social status.

TABLE 2. WORK RATIOS,¹ BY SEQUENCE OF MARRIAGE AND EDUCATION

Sequence	Respondents		Percent whose work ratios were:			Average work ratio
	Number	Percent	Low ²	Middle ²	High ²	
	Social work only ³					
Married after	389	100	39	51	10	.46
Married before	376	100	24	51	25	.61
Never married	272	100	6	29	65	.84
Total	1,037	100	25	45	30	.61
	All work ³					
Married after	389	100	51	36	13	.51
Married before	376	100	29	44	27	.65
Never married	272	100	4	25	71	.88
Total	1,037	100	34	36	30	.66

¹ Percent of months between date of master of social work (MSW) degree and survey date in which the respondent was employed at any job (all work) or in a social work job (social work only).

² The limits of the low, middle, and high categories were

0-0.49, 0.50-0.89, and 0.90-0.99 respectively for social work and 0-0.34, 0.35-0.89, and 0.90-0.99 for all work.

³ There is only 1 chance in 10,000 that these distributions occurred by chance.

Women married *before* professional education worked to a much greater extent than those married after. However, as might be expected, never-married women had the highest work ratios of all. In addition, those married after education were somewhat more likely to seek employment outside social work than those who married before.⁴ Perhaps those who chose a social work career after marrying were less likely to face unexpected conflicts between marriage and career or to find their geographic location unsuited to employment in their chosen profession.

⁴ The average work ratios for all work, expressed as percentages of those for social work only, are: Married after, 111; married before, 107; and never married, 105.

Career Patterns

The nine career patterns, in which each of the three ideological categories were subdivided into the three marriage-education sequences, formed the main independent variable used to explain work participation of female social workers.

Although sex-role ideology seems to have had little direct influence on work ratios, there were two instances in which sex roles combined with marriage-education sequences produced a different work pattern. (See table 3.) The first was that differences between sequence categories varied with ideology: Homemakers showed a greater difference between categories than either of the

TABLE 3. WORK RATIOS¹ BY CAREER PATTERN

Career pattern	Respondents		Percent whose work ratios were:			Average work ratio
	Number	Percent	Low ²	Middle ²	High ²	
	Social work only ³					
Homemaker	245	100	26	40	34	.64
After	80	100	48	40	12	.44
Before	92	100	24	51	25	.63
Never married	73	100	5	27	68	.86
Individualist	397	100	26	47	27	.60
After	155	100	39	52	9	.45
Before	131	100	26	56	18	.57
Never married	111	100	6	32	62	.84
Egalitarian	367	100	23	47	30	.61
After	146	100	35	55	10	.47
Before	141	100	23	48	29	.63
Never married	80	100	5	29	66	.84
	All work ³					
Homemaker	245	100	31	33	36	.67
After	80	100	55	31	14	.49
Before	92	100	32	39	29	.66
Never married	73	100	4	26	70	.88
Individualist	397	100	31	33	36	.67
After	155	100	52	36	12	.49
Before	131	100	31	48	21	.61
Never married	111	100	5	24	71	.88
Egalitarian	367	100	29	37	34	.67
After	146	100	48	37	15	.54
Before	141	100	25	44	31	.67
Never married	80	100	2	25	73	.89

¹ Percent of months between date of MSW degree and survey date in which the respondent was employed at any job (all work) or in a social work job (social work only).

² The limits of the low, middle, and high categories were

0-0.49, 0.50-0.89, and 0.90-0.99 respectively for social work only and 0-0.34, 0.35-0.89, and 0.90-0.99 for all work.

³ There is only 1 chance in 10,000 that these distributions occurred by chance.

other two ideology groups (for example, 19 percentage points difference in mean work ratios for social work only between those married before and those married after education versus 12 points for individualists and 16 for egalitarians). The second was that egalitarians who married after completing their education had the largest proportion of nonsocial work employment, while homemakers who never married had the least (proportion measured in both cases by the ratio of the all work ratio over the social work only ratio).

An effort was made to rank the nine career patterns in terms of work ratios by considering the following negative factors (factors likely to reduce career activity in social work):

1. Early homemaker orientation
2. Marriage after education and/or
3. A pull toward fields other than social work (expected to occur most often in egalitarians)

and these positive factors:

1. Early individualist ideology
2. Marriage before education and/or
3. Not marrying.

Based on average variations between hypothesized and empirical ranks, the career pattern variable was slightly more accurate than either the ideology or the sequence variable alone in predicting the ranks of the all

work ratios but not the social work only ratios. (See table 4.) Possibly the large difference between hypothesized and actual ranks in some cases is due to the equal weighting of ideology and marriage-education sequence in the work ratios, when in fact the latter was far more influential. In fact, the results might best be summarized by sequence only: Highest work ratios for those women who never married; middle, for those who married before obtaining their social work education; lowest, for those married after their studies were completed.

Control Variables

Three additional control variables were examined for their possible influence on work ratios. These were:

1. *Birth cohort*—Subjects were classified in one of four groups, or cohorts, on the basis of their year of birth: 1907-12, 1913-17, 1918-22, and 1923-27.

2. *Previous employment*—All work in the preprofessional period, as a ratio of all possible work in that period; this variable was divided into low, middle, and high ratios.

3. *Number of children*—The number of children a married woman had raised or was raising at the time of

TABLE 4. HYPOTHESIZED AND ACTUAL RANKINGS OF WORK RATIOS FOR COMBINATIONS OF IDEOLOGY AND SEQUENCE OF MARRIAGE AND EDUCATION AND AVERAGE VARIATION PER CATEGORY BETWEEN HYPOTHESIZED AND EMPIRICAL RANKS (1=lowest rank)

Ideology and sequence	Hypothesized rank	Actual rank, social work only	Actual rank, all work	Difference between actual and hypothesized rank		
				Social work only ¹	All work ²	Average
Homemaker:						
Married after	1	1	1.5	0.0	0.5	0.25
Married before	2.5	5.5	5	3.0	2.5	2.75
Never married	5	9	7.5	4.0	2.5	3.25
Individualist:						
Married after	2.5	2	1.5	0.5	1.0	.75
Married before	5	4	4	1.0	1.0	1.00
Never married	7.5	7.5	7.5	0.0	0.0	0.00
Egalitarian:						
Married after	5	3	3	2.0	2.0	2.00
Married before	7.5	5.5	6	2.0	1.5	1.75
Never married	9	7.5	9	1.5	0.0	.75

¹ There is an 85 percent probability that differences from hypothesized ranks are not due to chance.

² There is a 96 percent chance that differences from the hypothesized ranks are not due to chance.

the questionnaire; this variable was divided into three groups: no children, one or two children, and three or more children.

The main sequence effect held up when birth cohort and prior work experience were each controlled, although both greater age and larger amounts of prior experience tended to drive the all work ratios up. One reason age drove the *ratio* up may have been that, as more years were added to a career, the generally low-work period of the childbearing years became a smaller proportion of the total time that could have been worked.

Number of children had the greatest effect on work ratios of any of the controls: generally, work ratios decreased fairly steadily as number of children increased. However, the effects of sequence of marriage and education did hold up even within each category of number of children.

Which Variables Were the Most Useful Predictors?

Since some of the control variables appeared to affect work ratios as much as the independent variables, it was decided to assess the relative power of all the variables to predict work ratios. To do this, the AID Computer Program⁵ was used. Output from this program is in the form of a "tree of binary splits," such that the variable accounting for the greatest amount of variation is selected first, then the one accounting for the second greatest amount, and so on until there are no more useful or statistically supportable variables that can be entered. It is a technique analogous to multiple regression, without requiring regression's assumptions of linearity and additivity.

Six variables were examined using the AID Program:

1. Previous employment (preprofessional work ratio) (three categories)
2. Sequence of marriage and education (three categories)
3. Number of children (three categories)
4. Early sex-role ideology (three categories)
5. Birth cohort (four categories)
6. Mother employed (two categories: yes, no)

For the social work only work ratio, only the number of children and the sequence of marriage and education

had predictive utility (see figure 1). For all work ratios, the same variables were effective predictors; in one case (that of married women with no children) previous employment was also a useful variable (see figure 2). In addition, marital status appeared in both runs as an important predictor.

Current Work Situation: Who Works and How Well

Current work situation was examined in terms of current marital status and current sex-role ideology. Current sex-role ideologies were classified, as were early ideologies, as homemaker, individualist, or egalitarian. Only 46 percent of respondents currently professed the same ideology as that held when young. Current, unlike early, ideology was strongly related to marital status, with never-married respondents twice as likely to be egalitarians as other respondents.

The elements of current work situation considered were job satisfaction, current employment status, future work plans of those not employed, and level of professionalism.

At the time of the study 62 percent of the sample were working full time, 18 percent were working part time, and the remainder were not employed. As tables 5 and 6 indicate, employment status was significantly related to both marital status and current sex-role ideology. Never-married and divorced or separated women were most likely to be employed full time. Egalitarians were most likely, and homemakers least likely, to hold full-time jobs.

The working women were asked to rate their satisfaction with five aspects of their current jobs: The kind of work, salary, working conditions, level of professionalization of agency or firm, and the job as a whole. Seventy percent responded they were very satisfied with the kind of work, while 33 percent were very satisfied with their salary.

Current sex-role ideology was found to be unrelated to job satisfaction. The relationship of marital status to job satisfaction was barely significant; widows were less likely to be very satisfied with any dimension of the job than were other women.

Information as to future work plans was sought from the 20 percent of the sample who were not employed. Of these, more than 37 percent said they probably would not work again; nearly 20 percent said they

⁵ John A. Sondquist and James N. Morgan, *The Detection of Interaction Effects*, Monograph No. 34 (Ann Arbor: The University of Michigan, Survey Research Center, 1964).

FIGURE 1

Tree of binary splits for social work only work ratio means
(from Aid Computer Program) using selected predictor variables

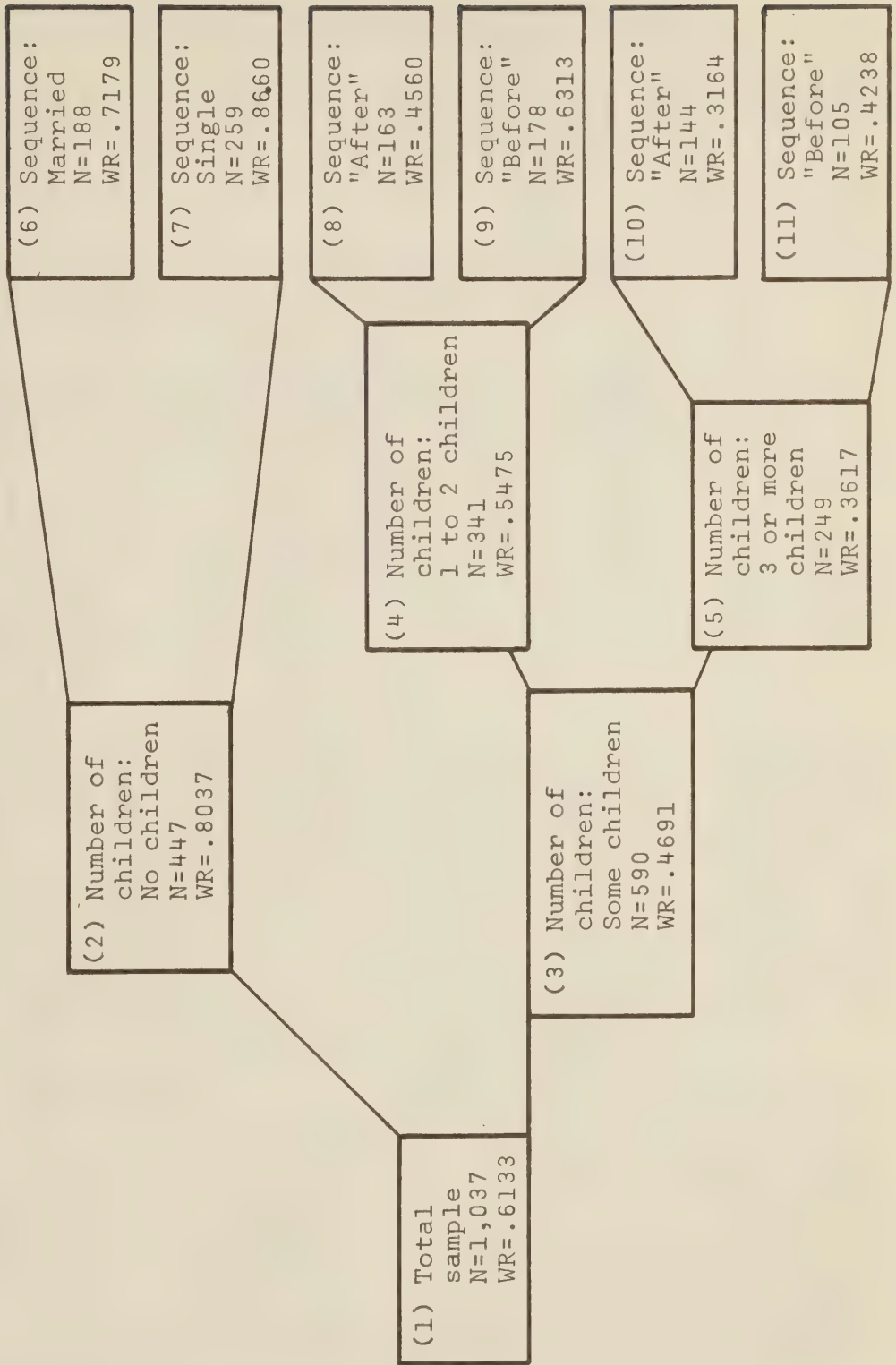


FIGURE 2

Tree of binary splits for all work ratio means
(from Aid Computer Program) using selected predictor variables

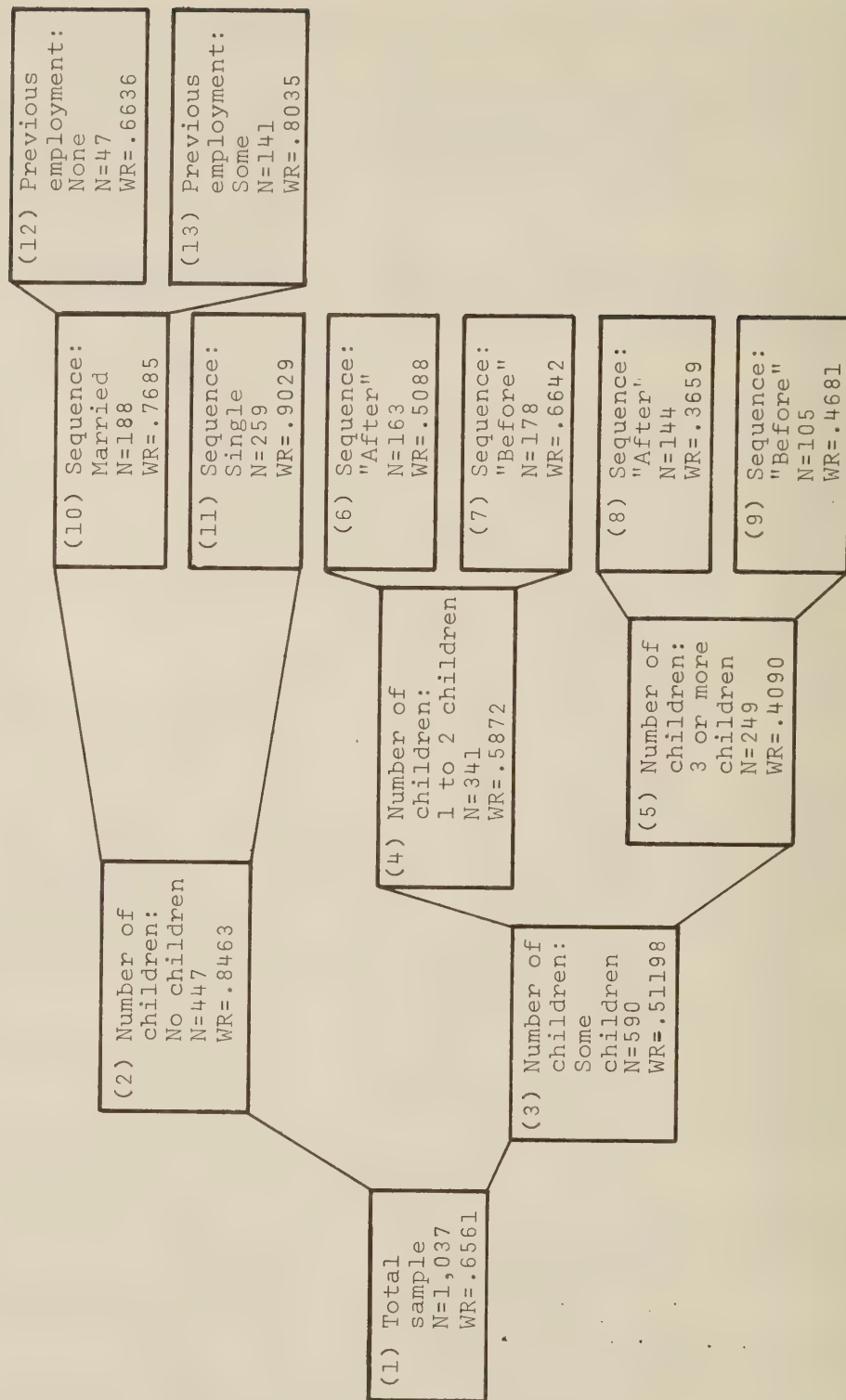


TABLE 5. CURRENT EMPLOYMENT STATUS, BY MARITAL STATUS

Marital status	Total		Percent ¹ who were:		
	Number	Percent	Employed full time	Employed part time	Not employed
Never married	255	100	94	3	3
Divorced or separated	92	100	90	4	6
Widowed	52	100	73	15	12
Married	638	100	46	27	27
Total	1,037	100	62	18	20

¹ There is only 1 chance in 10,000 that this distribution occurred by chance.

TABLE 6. CURRENT EMPLOYMENT STATUS, BY CURRENT SEX-ROLE IDEOLOGY¹

Current sex-role ideology	Total		Percent ² who were:		
	Number	Percent	Employed full time	Employed part time	Not employed
Egalitarian	324	100	81	10	9
Individualist	507	100	59	23	18
Homemaker	172	100	40	18	42
Total	1,003	100	60	17	23

¹ Includes only those women (97 percent of all respondents) who expressed a current sex-role ideology.

² There is only 1 chance in 10,000 that this distribution occurred by chance.

would work again within 1 year, 33 percent within 5 years, and the remaining 10 percent within 16 years. The relationship of future work plans to present ideology was strong, with four times as many egalitarians as homemakers planning to return to work within a year. Since 83 percent of the not employed group were married, an analysis by marital status was not practical.⁶

Professionalism was defined through measures of attendance at professional meetings, reading of professional books and journals, and social contact with fellow professionals. In addition, publication of books and articles and presentation of professional papers were considered. Level of activity in each of these areas was used to determine degree of professionalism.

Professionalism was found to be strongly associated with current sex-role ideology. For example, among egalitarians, 35 percent attended chapter meetings of relevant professional societies at least once a month, compared with 21 percent of homemakers. Although all respondents together had only had 44 books published, egalitarians were twice as likely as homemakers to have

had a book published. The professional activities index, an index made up partly of the frequency of attending professional conferences, was also highest for egalitarians, who were most likely to be never married and therefore free to travel. Thus, at least this measure of professionalism correlates with a cluster of factors associated with high productivity: current or recent employment, a never-married status, egalitarian ideology, and geographic mobility. On all the professionalism measures—from publishing books to reading journals—egalitarians scored highest, individualists next, and homemakers lowest.

Professionalism was also significantly related to marital status: On each measure of professionalism, married respondents scored lower than the other groups, presumably because domestic responsibilities make it more difficult for married women to engage in after-hours profession-related activities.⁷ Yet, voluntary activity was

⁶ Editor's Note: No analysis was done of the relationship between number of children or age of children and future work plans of those women not employed.

⁷ Editor's Note: In comparing professionalism by marital status and ideological groups, the researcher did not eliminate those not currently employed even if they stated that they did not expect to work again. Yet most of these women were married and, ideologically, homemakers. Accordingly, it would be inappropriate to interpret the lower professionalism Dr. Herberg found among married women as characteristic of married women currently holding—or even seeking—jobs.

found to be very high for married women and relatively low for those never married. However, women of all marital and ideological groups devoted the same amount of time to leisure activity.

While the low professionalism among married women is undoubtedly related to low employment rates, it is through after-hours activities in the professional culture that a nonworking woman can maintain her professionalism and ease her transition to professional employment at a later date.

Conclusions and Recommendations⁸

Many married women trained as social workers remain outside the labor force or work in other fields despite the nation's pressing need for skilled professional social workers. In 1965, it was estimated that an additional 100,000 social workers would be needed by 1970 in U.S. Department of Health, Education, and Welfare programs alone. David French⁹ has shown that expansion of the 2-year professional schools is not an adequate solution to the growing shortage of social workers. Strategies are needed to increase the employment of professionally trained women.

Strategies for change should include modification of at least four components: the community, the professional school, the employing agencies, and the professional women themselves.

1. At the community level, attempts should be made to increase and upgrade resources for household and child-care help. The Women's Bureau of the U.S. Department of Labor already has developed some strategies for household help through pilot studies.¹⁰

⁸ Editor's Note: Because the sample in this study was drawn only from the social work profession, results cannot safely be generalized to women with professional training in other areas or to working women without professional training. Because the sample of women in social work was not randomly drawn, care should be used also in generalizing to other women in this field.

⁹ David French, *Needed Research on Social Work Manpower* (Washington: U.S. Department of Health, Education, and Welfare, Welfare Administration, Bureau of Family Services, 1964).

¹⁰ *To Improve the Status of Private Household Work and Private Household Employment—Summary of Second Consultation* (Washington: U.S. Department of Labor, Wage and Labor Standards Administration, Women's Bureau, March 1965 and February 8, 1965, respectively).

The shortage of child-care resources is also a community problem deserving central planning.

2. Professional schools of social work can do much to modify the social context factors described. Professional social work schools already deal explicitly with various aspects of self-awareness in professional training. It would be a short step to inclusion of study aimed at developing awareness of family roles to be filled and of the effects of these on professionalism. Especially, the relationship of intermittency of work to professional culture should be explored, positively faced, and planned for.

Professional schools should have responsibility for developing bridging structures between profession and home. Reading courses, discussion groups, counseling on career plan changes, and assistance in locating part-time work (such as evening work) are some of the services that could be provided.

Also, professional school staff should be aware of the different interests and ideologies of students when it comes to career planning. For example, egalitarians might find greater satisfaction in the traditionally male-dominated areas of administration and community practice than in the more nurturant (and traditionally female-dominated) area of casework.

3. Employing agencies should cooperate with professional schools in planning to cope with career intermittency. In addition, they can help by developing and allocating work especially suited to women who cannot work full time. As Dr. Eli Ginzberg has suggested, agencies can also make a difference by communicating to women professionals that their work is important and that promotions do lie ahead.

4. The women themselves should be encouraged to develop realistic and explicit career plans and to become aware of different techniques for bridging the intermittencies in their professional work that are likely to occur if they marry.

Apart from added benefits to the profession in terms of more fully committed graduates, these changes are suggested in the belief that it is more humane to recognize crucial differences among classes of workers and to institute procedures to deal with them than to ignore them and expect, for example, working married women to find satisfactory alternatives to the career paths that they cannot take.

BRITAIN'S INDUSTRIAL TRAINING ACT: A CASE STUDY IN THE DEVELOPMENT OF PUBLIC MANPOWER POLICY

Great Britain's needs for skilled workers, and the concomitant need for occupational training programs, led to the enactment of the Industrial Training Act of 1964. The awakening of Britain's concern about these needs and the subsequent evolution of governmental, industrial, and labor roles in the formulation and administration of the law form the basis of this study.

But of immediate interest to this country are the lessons the British experience holds for our own manpower policies. The author points to a number of them. Fundamentally, he proposes a professional Manpower Training Service within the Manpower Administration, patterned after the British Industrial Training Service and Training Boards, to serve individual firms. Among other functions, it would survey the training needs and job deficiencies of particular industries; design and test training programs; measure training effectiveness; make followup evaluations; and perform other similar activities. Several alternatives for utilizing existing Government agencies for development of the new service are mentioned.

Introduction¹

In March 1964, the Parliament of Great Britain passed an important piece of manpower legislation—the Industrial Training Act. The purpose was to reshape the Nation's manpower training system. Because of the strategic importance of manpower training as part of manpower policy, the act was thought to provide an excellent focus for a study of the emergence of manpower policy in Great Britain. Furthermore, the widespread interest and concern in the United States about many of the issues and problems dealt with by the act suggested that a study of the British manpower training system would be of value to American public policymakers and students of manpower.

This study is a documentary history divided into three parts, each covering a significant chronological phase in the development of the manpower training system. The first (not included in this abstract) provides a broad historical overview of Britain's manpower development framework. The second describes the events immediately preceding the passage of the Industrial Training Act, beginning with the appointment of the Carr Committee in 1956. The third is an analysis of the subsequent implementation of the act and the experiences during its first 5 years of operation (1964-1968). "Manpower policies" are defined in this study as "those [policies] which develop the skills of the labor force and which match the labor supply to the demand for labor."²

¹In the following abstract, the author's emphasis has been changed somewhat to give greater weight to the possible implications the British case has for United States manpower policy.

²U.S. Congress, Senate, Subcommittee on Employment and Manpower of the Committee on Labor and Public Welfare, *Toward Full Employment: Proposal for a Comprehensive Employment and Manpower Policy in the United States*, 88th Cong., 2d sess., 1964.

The Manpower Training Revolution

Britain, in the first decade after World War II, attempted to improve the technical education and industrial training of its young people, both by implementing the provisions for further education in the 1944 Education Act³ and by adopting national apprenticeship schemes in all major industries. But the Nation's straitened financial circumstances in that period tended to nullify the education provisions, while continued employer apathy reduced the effectiveness of the apprenticeship agreements.

At the outset, there was widespread opposition to governmental intervention in training; but, although progress was slow, the reform of technical education was initiated, and opinion began changing in the period from 1955 to 1960. A definite shift of opinion in 1960 resulted from a persistent shortage of skilled manpower, increasing apprehension over foreign advances in science and technology, and concern over the failure of the Industrial Training Council (ITC),⁴ organized in July 1958 by the British Employers' Confederation and others, and other voluntary efforts to cope with the "bulge."⁵ Concern over school leavers was heightened by the difficulty in placing young people in employment following the economic downturn that began in 1958. There was also a growing awareness of the failure of apprenticeship as a vocational training system, as evidenced in a number of impressive research studies published during the period.⁶ While considerable progress was made in technical education, neither the timing

nor the weight of opinion was enough by 1960 to bring about major reform of industrial training. Two years passed before this could occur.

Direct Government Intervention: The First Steps

The basic problem to be resolved in training, as in many other spheres, was the role of government in society. By tradition, the function of government in Britain has been to correct the more extravagant and undesirable practices of industry, not to control industry directly. In this context the Carr report⁷ represented a rearguard action to prevent government intervention in training, a fact well illustrated by the way employers and trade unions closed ranks to keep the Government out.⁸ The committee report was unanimous and the committee did not coopt any outside members, such as a representative of the Youth Employment Service and Education Service, who had every right to be there.

Carr suggested the creation of local committees of the ITC whose first task would be a factual survey of the problem. This recommendation was in harmony with the basic philosophy of the Conservative Government. For this reason the Government throughout the 1958-62 period failed to provide leadership in training matters—abdicating its role to the British Employers' Confederation (BEC) and the ITC—and lagged substantially behind public opinion. Only when the external forces of youth unemployment, economic recession, and Common Market negotiations, together with the chorus of aroused public opinion, became compelling did the Government reluctantly agree to intervene in industrial training. Thus, by late 1962 an important stage in industrial training reform had been reached.

³ The act viewed education as a continuous process, consisting of three stages: primary, secondary, and further. County colleges were to be established to provide such further education, including physical, practical, and vocational training.

⁴ The objectives of the ITC were "to keep under review the recruitment and training of workpeople, to provide encouragement and help to industries in dealing with the training of workpeople and to collect and disseminate information about aspects of training common to more than one industry, including information about training practices in other countries."

⁵ The name given to the phenomena resulting from an increase in the number of school leavers (or dropouts) entering the labor market beginning in 1959 and reaching a peak in 1962. School leavers at this time were youth of 15 years (the legal minimum working age) or older who had left the formal educational system.

⁶ See for example: Gertrude Williams, *Recruitment to Skilled Trades* (London: Routledge and Kegan Paul, 1957); Kate Liepmann, *Apprenticeship: An Enquiry Into its Adequacy Under Modern Conditions* (London: Routledge and Kegan Paul, 1960); Stephen F. Cotgrove, *Technical Education and Social*

Change (London: George Allen & Unwin, 1958); P. F. R. Venables, *Sandwich Courses: For Training Technologists and Technicians* (London: Max Parrish, 1959); P. F. R. Venables and J. W. Williams, *The Smaller Firm and Technical Education* (London: Max Parrish, 1961); D. M. Silberston, *Youth in a Technical Age* (London: Max Parrish, 1959); and D. M. Silberston, *Residence and Technical Education* (London: Max Parrish, 1960).

⁷ Great Britain, Ministry of Labor and National Service, *Training Skill: Recruitment and Training of Young Workers in Industry* (cited here as the Carr report), Report by a Subcommittee of the National Joint Advisory Council (London: Her Majesty's Stationery Office, 1958).

⁸ The committee concluded that Britain should "build upon foundations that have already been laid rather than attempt to construct something entirely new," and that "... the immediate problem presented by the 'bulge' is whether industry will see its own interests clearly enough and soon enough to make sure that the opportunity which it presents is not thrown away."

Disillusionment over the ITC was almost complete. Dissatisfaction with the arrangements for training craft apprentices and other young workers was widespread. There was a general recognition that the reform of apprenticeship was a matter of urgency from the point of view of cold economics. Thanks to the pioneering work of many individuals and organizations, a white paper on industrial training,⁹ setting forth the Government's proposals, was published in December 1962.

From White Paper to Industrial Training Act

The marked change in opinion between the publication of the Carr report and the white paper is best indicated by the welcome given to the radical proposals by all the main employer associations, trade unions, and the educational world. At the time of its publication, Ministry of Labor officials did not know how much opposition their far-reaching proposals of levy (or taxing) authority and Industrial Training Boards (ITB's) would engender.

The white paper recommended that the Minister of Labor be given statutory power to set up Boards which would be responsible for all aspects of training in individual industries. These boards would be empowered to provide policy, standards, and advice on training. They could also raise and distribute funds to carry out these activities. It was recommended that they have the power to: (1) Pay grants to reimburse firms for all or part of the costs incurred in the provision of approved training; (2) provide allowances to trainees not taken on by firms while being trained in public centers or the Boards' own; (3) collect money from establishments in the industry by means of a levy; and (4) borrow.

In the parliamentary debates on the Industrial Training Bill, major political parties agreed to the urgent need for passage. The only issue which resulted in a major disagreement was whether there should be a strong, autonomous body to act as a national training executive. In early discussions, the British Association of Commercial and Industrial Education (BACIE) argued for a strong centralized national training authority with executive power to insure that industries fulfilled their training responsibilities. The white paper made no

provision for such an executive body. However, BACIE's arguments, bolstered by the obvious failure of the powerless Industrial Training Council, were adopted and pushed by the Trades Union Congress (TUC). The Ministry of Labor also opposed a central body. It was prepared to carry out all the functions sought by the proponents of a national training executive. Furthermore, the Ministry argued, Parliament could not and would not delegate taxing authority to an autonomous body not directly responsible to it. A compromise was effected providing for the establishment of a central training council as an advisory body to the Minister of Labor.

It appears that employers, trade unions, and politicians, through their common experiences in National Economic Development Council (NEDC) planning, Common Market negotiations, and Industrial Training Council reform, had been sufficiently "enlightened" to accept the proposed national system without too much resistance. The Industrial Training Bill became law in March 1964 after a smooth and swift voyage through Parliament.

Industrial Training Act

The formidable task of implementing the act was already well underway by the time it received the royal assent.

At an early stage it was reported that the Government's timetable called for the provision of formal training within 3 years for all industries included under the act, to be accomplished by the establishment of 25 to 30 Industrial Training Boards (ITB's). Official estimates were later revised upward. At the rate of progress in 1970, the administrative framework for the system was expected to become fully operational by 1974—approximately 10 years from the passage of the act.

Soon after the task of organizing ITB's was underway, two views emerged concerning the rate at which new Boards should be established. One advocated the slower buildup, arguing that the lack of experienced training officers could seriously jeopardize success, while the creation of more Boards could spread the existing training officers too thin to be effective. The second view argued that the system must be reasonably complete, covering the majority of commercial and industrial enterprises, to make it work satisfactorily. The criteria used and the degree of priority given by the Ministry of

⁹ Great Britain, Parliament, *Industrial Training: Government Proposals*, Cmnd. 1892 (London: Her Majesty's Stationery Office, 1962).

Labor in selecting industries included the nature and extent of existing training and the economic importance of the industry.

The point of departure for establishing a Training Board and making ITB policy came in the appointment of a chairman and board members. Though the act specifies that the chairman should be an "independent," the Minister of Labor, with some notable exceptions, has usually chosen men eminent in the industry for this job. The act empowers the Minister of Labor and the two Education Ministers (Britain and Northern Ireland) each to appoint a representative (assessor) to attend meetings of the Boards. These assessors provide the formal communication links between the Boards and their respective ministers.

It has been the practice of the Ministry of Labor to provide career civil servants to function as board secretaries until boards are sufficiently organized. The

startup time for most Boards has averaged from 18 months to 2 years. One of the first jobs of the Boards is the compilation of a register of establishments in their industries.

Industrial Training Boards

The task of implementing the Industrial Training Act in the period since 1964 has proven to be a difficult and lengthy process. Table 1 gives an indication of both the length of time it has taken to organize the Boards and the number of firms to be organized. Initial priorities suggested for the ITB's by the Ministry of Labor were hard to follow. Assessment of the manpower requirements of industry, initially a high-priority item, was deferred until the Ministry's Manpower Research Unit

TABLE 1. DATE OF ORGANIZATION AND COVERAGE OF THE INDUSTRIAL TRAINING BOARDS IN GREAT BRITAIN

Date of organization	Industry covered by board	Establishments	Employees
June 1964	Wool, jute, and flax	2,000	180,000
July 1964	Iron and steel ¹	643	304,000
July 1964	Construction	68,000	1,700,000
July 1964	Engineering ¹	28,000	3,549,000
Nov. 1964	Shipbuilding	1,130	130,000
June 1965	Electricity supply	17	250,000
June 1965	Gas	13	125,000
June 1965	Water supply	570	45,000
July 1965	Ceramics, glass, and mineral products	3,688	345,000
Dec. 1965	Furniture and timber	4,967	215,000
Feb. 1966	Man-made fibers	40	47,000
Mar. 1966	Carpet	271	42,000
Mar. 1966	Knitting, lace, and net	1,400	142,000
July 1966	Cotton and allied textiles	1,700	220,000
Aug. 1966	Agriculture, horticulture, and forestry	140,000	500,000
Sep. 1966	Road transport	100,000	1,000,000
Nov. 1966	Hotel and catering	150,000	1,000,000
Mar. 1967	Civil air transport	357	61,000
May 1967	Petroleum	1,400	84,000
Aug. 1967	Rubber and plastics processing	2,000	220,000
Oct. 1967	Chemical and allied products	3,000	500,000
Nov. 1967	Local government	1,500	1,000,000
May 1968	Paper and paper products	2,000	250,000
May 1968	Printing and publishing	4,500	400,000
July 1968	Distributive	500,000	2,250,000
July 1968	Food, drink, and tobacco	135,000	1,400,000
Nov. 1968	Footwear, leather, and fur skin	6,000	180,000

¹ Using the power given them under the act to set up joint committees (with the approval of the Minister of Labor), a Joint Committee for Training in the Foundry Industry was set up in March 1965, by the Engineering and Iron and Steel ITB's. This committee, reconstituted as the Foundry Industry Training Committee on September 1, 1967, is now responsible for some 1,565 establishments covering 155,000 employees.

SOURCE: Department of Employment and Productivity, Central Training Council, *Third Report to the Secretary of State* (London: Her Majesty's Stationery Office, 1969). There is considerable variation among the sources available as to the number of establishments and employees under the jurisdiction of the ITB's.

and the ITB staffs could improve their ability in manpower forecasting and resolve some of the difficulties encountered. These problems, together with pressures brought to bear on the Boards by the Ministry to establish the levy-grant system and become self-supporting, placed the establishment of levy-grant¹⁰ machinery at a high level of priority.

A number of problems have been encountered by the Boards in operating their levy-grant systems, particularly the possible inequity for some groups, such as small firms or those with a significantly smaller training need than the general run of firms. The small firms need more

flexibility than large firms in all matters—including training—in order to survive. In the first 5 years after the passage of the act, the relative disadvantages of smallness were demonstrated by the high proportion of small firms in the construction and engineering industries which paid levies to their Training Boards, yet received very small grants in return. Another problem was balancing the desire to keep the levies simple and uniform against the need to meet special situations which led to complexity and diversity. Table 2 provides some clue to the differences in the distribution of levies and grants. Even more fundamental, some Boards, supported by a growing body of informed opinion, began to question the need to follow a high-levy policy. Given the complexities of accurately calculating training costs, and the desire to prevent training from becoming an end in

¹⁰ Levy-grant machinery would levy a tax on each industry to pay the cost of training; a grant would be made to each firm engaged in training to defray its costs.

TABLE 2. INCOME AND EXPENDITURE OF BRITISH INDUSTRIAL TRAINING BOARDS FOR THE YEAR ENDING MARCH 31, 1968

Board	Levy £	Exchequer grant received £	Percent of total wages paid in levy	Total sums paid to employers £	Total expenditure £
Agriculture, horticulture, and forestry	----	616,367	---	7,545	678,949
Carpet	173,046	1,910	0.9	69,726	124,616
Ceramics, glass, and mineral products	3,095,044	6,305	.75 (standard rate) ¹	2,353,217	2,646,855
Chemical and allied products	----	31,639	---	951	31,639
Civil air transport	----	40,851	---	1,128	40,929
Construction	15,845,149	118,320	1.0	41,477,216	23,610,314
Cotton and allied textiles	641,453	46,390	.4	280,077	353,998
Electricity supply	74,130	54,597	.025	57,303	106,692
Engineering	86,490,435	402,559	2.5	81,539,709	85,112,059
Furniture and timber	747,568	896	.9	922,767	1,077,709
Gas	747,381	6,085	1.25	389,405	431,291
Hotel and catering	2,749,636	301,775	1.0	1,655,074	2,258,114
Iron and steel	4,346,283	33,174	per capita levy (£18 per employee)	4,916,482	5,151,880
Knitting, lace, and net	401,691	1,763	1.0	121,830	206,784
Man-made fibers	40,864	2,992	.2	4,640	27,581
Petroleum	----	55,381	---	151	55,381
Road transport	11,345,690	166,436	1.6	9,095,000	9,864,321
Rubber and plastics processing	----	32,742	---	52	35,556
Shipbuilding	1,287,300	6,980		712,592	847,302
Water supply	492,674	29,057	1.1	265,757	714,779
Wool, jute, and flax	2,103,183	12,499	1.5 (standard rate) ¹	1,877,477	2,037,570

¹ These boards have differential rates of levy.

NOTE: Total income shown does not always match total expenditure because the figures for levy and grant relate to different periods. In some cases a balance of levy income has been carried forward from a previous year. Some Boards have not yet published the first annual report and others have not

yet raised a levy. Total expenditure for some Boards includes amounts earmarked for grants but not yet paid.

SOURCE: Industrial Training Boards' *Annual Reports* for the year ending March 31, 1968, as compiled by *Teacher* and published on February 28, 1969.

itself, they urged that the Boards start making reimbursement of all training costs their primary objective.¹¹ There has been a substantial increase in training facilities since 1964, including the establishment of unique training schools by such Boards as Construction, Road Transport, and Shipbuilding. This has been paralleled in many Boards by organization of training advisory services. Such activity holds the key to improving training at the level of the individual firm.

Questions have been raised regarding the quality of the courses for training officers and the caliber of people being attracted to them. But as yet there is little feedback on the contribution to improvements in the training syllabuses developed under the auspices of some of the Boards, especially to assist small firms. The controversy over the cumbersome nature of the levy-grant system and its inequities, together with the problems of the small firm, had not yet been successfully resolved.

The Central Training Council

The Central Training Council (CTC) represents a political concession. The enabling legislation specified that it would be an advisory body to the Minister of Labor. For the first 2 or 3 years after passage of the act, the Council attempted to find a role for itself, but for the most part it brought about little positive benefit. In addition, many of the Council's endeavors appeared to echo the Minister rather than demonstrate independent thought. It would be difficult to conclude from past performance that the Council has provided strong leadership in the development of the new training system.

Its major weaknesses appear to be its part-time status and the lack of effective staff support. To be more effective, the Council must either be given an independent staff, or the secretarial and technical support provided by the Ministry must be expanded. The CTC must have the capability to undertake intensive studies and surveys if it is to assist the Minister in effectively monitoring the Boards.

The experience of the first 5 years suggested that it would be unrealistic for the Council to become an executive body as some had advocated. Such a change would necessitate a radical administrative restructuring

of the system, resulting in less Board autonomy and industry cooperation. Furthermore, meeting the complex and diverse training needs of the industries and fostering innovation and flexibility in training would not be furthered by too much centralization. Finally, there was the constitutional problem of delegating the power to impose a levy by the Minister to a body, such as the CTC, not responsible to Parliament. This would violate the public trust. On the other hand, changes designed to strengthen the CTC would have to be made if it were to become more effective in carrying out its advisory role. Recommendations concerning the future role of the CTC were to be made when the Review Committee¹² made its report in 1970.

Associated Further Education

The dichotomy between education and training in Britain was formalized long before the passage of the Industrial Training Act. Employers were responsible for providing the "practical" training of young people in industry, and the "theory" or academic courses were the responsibility of the educational system. The Industrial Training Act did not fundamentally change this position. It recognized the division of responsibilities and placed the employer's obligation on a statutory basis. Machinery was also provided to better coordinate and integrate the efforts of employers and Government to offer vocational education and training for the Nation's citizens.

The basis for part of this machinery comes in the importance the act attaches to "further education." This concern is evident both from the specific provisions of the act¹³ and the composition of the Boards and Central Training Council. Further education as an essential part of a balanced training program became explicit policy in 1965. One significant development since the passage of the act is the provision of industrial, as distinct from further, education in technical colleges. A combination of education and training is provided in the form of a 1-year full-time course for first-year craftsmen and

¹²Set up in February 1969 upon the recommendation of the House of Commons Estimates Committee.

¹³Under Section 2(1) (c) of the act the ITB's are responsible for considering jobs in the industry and publishing recommendations on the nature and length of the training for these and the *further education to be associated with this training*. They are empowered to make detailed recommendations on the form and content of training courses, the level of competence to be reached by trainees, and the standard for training supervisors.

¹¹Editor's Note: The levy-grant scheme was discarded in 1972. See J. R. Talbot, "The Training Scene 9," *Industrial Training International: A Review for Industry and Commerce, Technical and Further Education*, September 1972, p. 264.

technicians. The cost of the industrial training element in these integrated courses is met by employers, who may then claim a grant from their ITB's.

In a sense, the act has served to wed technical education and industrial training in Britain. For these two partners, it has been an uneasy alliance with many unresolved problems to face and new relationships to be worked out. The Training Boards have provided the basis for a substantial increase in the demand for associated further education and are in a position, by virtue of their autonomy and financial independence, to make decisions and take action which may not be seen as in the best interests of further education. Yet most Boards have shown considerable tact and aplomb in reconciling education and training interests in their training recommendations. They provide a means for bridging the gap between vocational education and industrial training. If they are successful, their methods will bear close study and imitation by other nations.

The Industrial Training Service (ITS)¹⁴

The Industrial Training Service had an inauspicious start in February 1960 as the training advisory arm of the voluntary Industrial Training Council. Set up to cope with the bulge in school leavers in the early 1960's, it began offering advisory and consulting assistance to employers.¹⁵ In addition, it sponsored conferences on training and operated an information service.

With limited resources, the Service carried out a small but exemplary program from 1960 to 1964 to promote good training. The ITS found two overriding problems in its early training experiences: selling training to company managers and providing an adequate supply of technical guidance and practical help at company level.

After 1964, the ITS carried out a number of functions bridging the gap between industry and the Boards during the formation of the latter. Once the full range of Industrial Training Boards had been established, it developed an expanded advisory and consulting role. In 1967, a new role emerged—that of conducting innovative research and development work in conjunction with academic institutions and industry. Yet

the longstanding policy of making the ITS financially self-sufficient by 1968-69 required that consultancy work be given first priority. Consequently, research and development, advisory work, and essential administration suffered. In 1969, the ITS went international when it sent a team to Dublin to develop a training course for 16 training officers for the Irish Industrial Training Authority. Since then, it has sent a team to the Colombian Government for a similar purpose.

The ITS has been assured of a permanent role within the framework of Britain's new manpower training system. In the future, it will probably move in the direction of more research and experimental work and less routine activity. If more research and experimental work and more writing and publishing are to be done, the Government and/or the ITB's will have to subsidize the work of the ITS accordingly. Another activity might be to increase its evaluative work. It is also possible that the ITS might evolve into a national center for industrial training.

The Ministry of Labor: Midwife to Manpower Policy

The Ministry of Labor was assigned the major responsibility for implementing the act. Assuming this responsibility necessitated the expansion of its own Training Department and the creation of a Manpower Research Unit. From 1965 to 1970, these new and expanded organizations engaged in supervising the organization of the Industrial Training Boards, developing a national manpower forecasting capability, providing staff support to the Central Training Council, and advising the Minister on industrial training matters.

The adoption of economic planning by the Government, first on a voluntary basis and after 1964 on a more formal basis, gave manpower training and other manpower programs an important boost. The redeployment of labor and the use of labor reserves were seen as essential to the solution of the main problems facing the Nation—to restore the balance of payments, to increase industrial efficiency, and to close the manpower gap.

An essential element of the National Plan, a comprehensive economic plan put forth by the Labor Government, was the development of an active manpower policy consisting of a system of unemployment compensation, the continued development of the ITB's, a further expansion of the Government Training Centers, improvement of the Employment Exchange system, and various other measures to improve the mobility of

¹⁴Editor's Note: The author feels that the organizational concept embodied in the ITS is exportable and offers an emulative model of the type of manpower training advisory services needed in the United States.

¹⁵This advisory and consulting assistance consisted of surveys of training needs, development of training programs, and selection and training of training staff.

workers. The Government Training Centers (GTC's), established before passage of the Industrial Training Act, provided the medium for carrying out several training programs (e.g., adult retraining, first-year off-the-job training, etc.) administered by the Ministry of Labor. Accomplishment of these objectives would have required the Ministry to assume a dominant role in developing manpower policy.

From 1965 to 1968, Ministry personnel struggled to reorient their thinking and to fulfill their expanded responsibilities. The task was made more difficult by the economic crises which occurred in the mid-60's before the new training system could be organized. Pressures on the pound sterling increased during this period, forcing the Labor Government to impose a strong set of deflationary measures to strengthen the economy. In the manpower field, this turn of events necessitated greater emphasis on adult retraining and the expansion of the GTC's by the Ministry instead of relying on the ITB's. With the new importance of manpower affairs, the Ministry, in 1968, was given the more descriptive title of Department of Employment and Productivity; and it created a Manpower and Productivity Service, staffing it from its former Industrial Relations Offices.

By the end of 1968, the major components of Britain's emerging manpower policy had been created. The job that remained was to continue development of nascent programs, to add new programs, and to rationalize and integrate the many programs into a coherent manpower policy.

Summary

The first major objective of the Industrial Training Act is to insure an adequate supply of properly trained men and women at all levels of industry. At first glance this objective appears to be simply increasing the output of trained people in all skill categories. Also, on the demand side, accurate manpower information and forecasting are needed. Equally important is the question of manpower utilization, including the retraining and re-deployment of the labor force within and outside the firm and industry. Since passage of the act, two basic and closely related issues have emerged. They involve retraining of jobless workers and training of new entrants into the labor market. The ultimate resolution of the retraining problem will depend on the widespread adoption by firms throughout industry of the techniques of job analysis and job objectives now being fostered by

the ITB and ITS. The act does not now require an employer to train new entrants if he does not wish to do so. Consequently, the training needs of many young people are unmet.

The second objective is to secure improvement in the quality and efficiency of industrial training. The Training Boards are making headway in developing training standards but face the problem of how to meet the training needs of small firms.

The third objective is to apportion the cost of training more evenly. Grave doubts have been raised about the appropriateness of this objective. To begin with, a substantial amount of criticism has been leveled against the levy-grant system. The procedures are said to be too complicated. Also, the system seems to encourage training for the sake of training and not for its contribution to a firm's productivity and profitability. Serious doubts have also been raised about the validity of the equity argument;¹⁶ when subjected to an economic evaluation, the argument appears considerably weaker than it originally appeared. Much of the training cost to the firm is offset by the foregone earnings of the worker during the extended training period.¹⁷ Finally, and more fundamentally, it is argued that the system may not contribute to an optimal sharing of power and costs between the Government, the Boards, and individual firms; and the operation of the levy-grant systems may have undesirable consequences for economic growth.

The conclusion of this study is that there was need for a radical reform of Britain's existing manpower training system. This need derived from the following: its archaic structure, the retrograde attitudes of management and labor toward the role of training as part of human resource development, and the general shortage of training. It is further concluded that the institutional

¹⁶The equity argument was used, in part, to justify the Industrial Training Act. It was argued prior to 1964 that firms should bear their full share of training costs. Since the system was organized by industries, it was assumed that persons leaving one job would remain in the same occupation, utilizing their acquired skills. Many job changes, however, are also changes in occupation, and consequently, the receiving firm may not benefit from previous specialized training. Also, the time period required to recoup an investment in training was thought to be a cost to the firm doing the training, if the turnover in workers is fairly quick.

¹⁷Editor's Note: The traditional apprenticeship schemes had the common feature of beginning at age 16 and ending at age 21, regardless of the skills to be mastered. The employer agreed to move the apprentice through a series of tasks required by the job in order to give him comprehensive experience in the work. This training was watched over by a skilled man in the trade. Wages were set at less than the adult rate and increased annually at an agreed-upon rate until the apprentice was considered a skilled worker and entitled to the adult rate.

framework for the modernization of Britain's manpower training system was soundly conceived and based upon the natural evolution of the Nation's industrial relationships. In addition, given the deep-rooted and stubborn nature of the problems, it is felt that the levy-grant system served as a useful—even necessary—educational process, needed to modernize Britain's manpower training system. Finally, the operation of the levy-grant system enabled the Industrial Training Boards to make notable innovations in training and to improve training standards on a once-and-for-all basis.

Notwithstanding the positive contributions attributed to the levy-grant system, it has since outworn its usefulness and has been phased out. The study presents a strong case for retaining the ITB system, including a token levy to support its other positive activities. However, it might be administratively more feasible to collect a token levy as part of the tax system.

On the basis of these conclusions, it would seem desirable for the older, established ITB's to plan to bring to a close the first stage of manpower training reform in Britain. Consideration should be given to the proper relationship among the ITB's, the Government Training Centers, and other Government-sponsored training activities. The Training Boards could serve as effective agencies through which public manpower training programs could be provided in lieu of the levy-grant mechanism.

The Department of Employment and Productivity is the appropriate governmental body to carry out the overall direction of manpower training in Britain (in cooperation with the Department of Education and Science). The Central Training Council should remain as an advisory body only. The time is rapidly approaching when the Central Training Council and/or the Department of Employment and Productivity will have to assume the responsibility for evaluating the work of the ITB's in more than a cursory manner.

Lessons From the British Experience

Three conclusions stand out from the British experience. First, when the need for a "shake out" and "redeployment" of resources first became apparent, a full range of manpower policies and programs should have been available. Second, the creation and expansion of a substantial number of agencies and programs with

manpower dimensions have generated problems of coordination and rationalization. The British have attempted to create the broad framework for their manpower policy that will help them overcome these problems. The United States should adopt an equally broad-based approach to its manpower problems. Third, the Industrial Training Boards offer a useful and potentially successful model for the development of an effective manpower training system. The United States has devoted considerable time and money to the attempt to create programs to reclaim and develop its human resources but has omitted a realistic and effective means of helping the employer do his part. There is a need for training advisory services for employers.

The concept of a manpower training advisory service patterned after the British Industrial Training Service and the Industrial Training Boards does have application here. The contrast between the extent and effectiveness of the training assistance provided to individual firms under U.S. manpower programs and that provided by the British ITB's and ITS is striking. It is proposed that serious consideration be given to the development of a professional Manpower Training Service (MTS) for the United States, modeled after the British program.

Among the specific functions envisioned are these:

1. Conducting surveys of job deficiencies and training needs.
2. Designing, developing, and testing appropriate training programs.
3. Planning for the selection and training of training staff.
4. Selecting and/or preparing teaching aids.
5. Designing training accommodations or facilities.
6. Measuring training effectiveness.
7. Conducting followup evaluation.
8. Developing manpower budgeting capabilities at the level of the firm.
9. Planning to meet the special training needs of the disadvantaged and of small firms.
10. Disseminating information on good training practices.

There are several alternatives for developing an MTS. The Manpower Administration or its subsidiary Bureau of Apprenticeship and Training (BAT) in the U.S. Department of Labor might provide a base for such development. The Small Business Administration (SBA) is another alternative, while a fourth is the Bureau of Adult, Vocational and Technical Education of the Office of Education, U.S. Department of Health, Education, and Welfare. Of these alternatives, the Manpower

Administration of the U.S. Department of Labor is advanced as the most appropriate agency at the Federal level for the development of such services.

At the State level there are four alternatives for developing the proposed MTS. First, the Technical Services Act (1965) provides for the establishment in each State of a technical services agency to assist in promoting the application of new technology and new technical procedures. A second alternative is the vocational education establishment. A third is the land grant university, or some other academic institution concerned

with the mechanical arts. And the fourth—and most promising—is the State employment service.

Successful development of the proposed Manpower Training Service within the framework of the Federal-State employment service, directly under the Manpower Administration, would depend on establishing close working relationships with allied State and local agencies. A well-conceived Manpower Training Service would contribute to the overall improvement of training in industry and to a more effective manpower policy for the United States.

WHERE TO GET MORE INFORMATION

For more information on manpower programs and services in your area, contact your local employment service office or the nearest office of the Regional Manpower Administrator at the address listed below.

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